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ABSTRACTS

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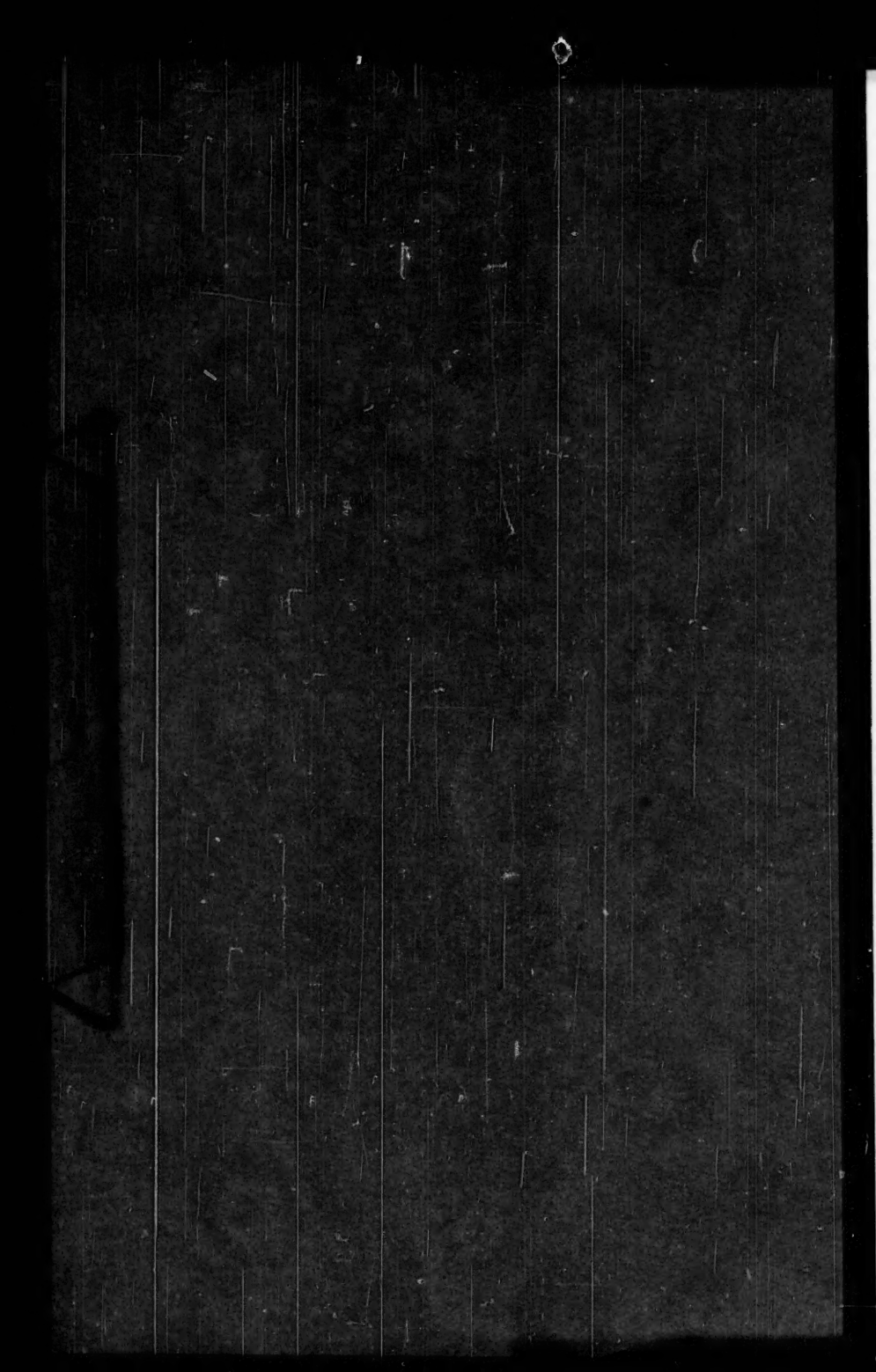

THE JOURNAL OF THE
TEXTILE INSTITUTE

ABSTRACTS

(The titles which are set in bold-face are intended as "scanning titles" for ease in classifying and filing. Where these are not substantially the authors' titles the exact titles are set in parentheses.)

1—FIBRES AND THEIR PRODUCTION

(C)—VEGETABLE

Cotton Fibre Properties: Improvement by Plant Breeding. J. W. Neely. *Text. Res. J.*, 1950, **20**, 433-440. The improvement of the quality of cotton fibre through the development of improved varieties by breeding requires a full understanding of: (1) the physical basis of inheritance, (2) the origin and development of the cotton fibre, (3) the effect of inheritance and environment on the properties of cotton fibre, (4) the use of fibre technology in the improvement of fibre quality through breeding, and (5) the use of plant breeding technique in developing improved cotton varieties. Each of these aspects is dealt with in turn. **C—1C.**

U.S. Cottons: Comparative Fibre and Spinning Tests. J. W. Wright. *U.S. Dept. Agric. Prodtn. Mrkting Admin. Cotton Branch, Pamph.*, 1950, May, 11 pp. Fibre and spinning test results for cottons produced during the 1949 season at a South Carolina experimental station are summarised. Fibre tests comprise staple length, strength, fineness, maturity, and grade classification tests. For derived yarns, data for neppiness, strength, skein index, and appearance are recorded. **C—1C.**

Indian Cotton Crop, 1947-48 Season: Report on Staple Length. Indian Central Cotton Committee. *Statistical Leaflet*, No. 1, 1950, January, 9 pp. Data are presented for the staple length, colour, feel, blow-room loss percentage, spinning capacity, and estimated production of the Indian cotton crop of the 1947-48 season, classified according to staple length. **C—1C.**

Flax Growing: Canada. *Linen Trade Circ.*, 1950, **36**, July 22, 1. A Review of Progress Report, 1937-47, of the Fibre Division, Central Experimental Farm, Ottawa, traces briefly the raising of the Canadian flax acreage in war-time, harvesting conditions, and a fibre grading system, and mentions areas best suited for flax, and varieties of flax preferred. Some statistics are included. **L—1C.**

Jute Substitute Fibres. C. M. Watson. *Linen Trade Circ.*, 1950, **36**, August 19, 13-14; August 26, 1, 5, 11. The jute situation, to which the revival of interest in substitutes is due, is discussed briefly, and substitute fibres are listed as stem bast and leaf bast. Tests are described in which *Urena lobata*, or Congo jute, said to be jute's strongest rival, was processed 100 per cent. over the usual jute system. **L—1C.**

(D)—ARTIFICIAL

Viscose Rayon Production: Action of Coagulating Bath: Colloidal-Chemical Theory. M. Horio. *Text. Res. J.*, 1950, **20**, 373-381. The stability of cellulose xanthate sol in the presence of electrolytes has been studied. Coagulation values for various salts and mixtures of salts on the xanthate are reported. From these values a classification of ions according to their coagulating power and mechanism of coagulation is suggested. In similar fashion, the behaviour of salt mixtures on cellulose xanthate sol has been classified as additive, sensitising, or antagonistic in accordance with colloid-chemical theory. The rate of coagulation by different ions and the influence of the degree of sulphidity and the degree of polymerisation of the cellulose xanthate on the coagulation values are discussed. These data can be correlated with changes which take place in the course of fibre formation during viscose rayon spinning. **C—1D.**

Vicara. G. R. Wildermuth. *Papers Amer. Ass. Text. Technol.*, 1949, **4**, 111-114. Some information on the zein fibre Vicara is presented, dealing with manufacture, physical properties, chemical properties, bleaching, dyeing, and textile processing. The paper is followed by a discussion (*ibid.*, pp. 115-116). Illustrations of some Vicara blend fabrics are given. C—**1D.**

Synthetic Fibres: Development. ("The Search For New Polymers.") J. A. Somers. *Brit. Rayon & Silk J.*, 1950, **26**, April, 64-65; June, 52-53; (*to be contd.*). Properties of polymers necessary for the formation of useful textile fibres are indicated. New polyamides containing benzene nuclei are being investigated and the syntheses and properties of some such polymers are discussed. Polyamide chains containing oxygen or sulphur atoms are also considered. These, as yet, have not met with success as fibre-forming materials. Dyeing and other characteristics of the polyamides considered are discussed. C—**1D.**

"Dynel". Carbide and Carbon Chemical Corporation. *Hosiery Ind. Wkly.*, 1949, **56**, (18), 1, 10. Note on "Dynel", acrylonitrile/vinyl chloride copolymer staple fibre, for use in knitting half-hose, *etc.* Properties claimed include good warmth and handle, high strength, and resistance to fire, moth and fungus attack. Acid type or acetate dyestuffs may be used with good light and washing fastness. H—**1D.**

"Fiberfoyle": Employment. Aberfoyle Mfg. Co. *Hosiery Ind. Wkly.*, 1949, **56**, (7), 1, 4. Note on new cellulosic fibre, "Fiberfoyle", for knitting half-hose, anklets, *etc.* Wider range of counts can be used on any given needle; wearing quality is claimed to be good; the fibre may be dyed with cotton dyes. H—**1D.**

2—CONVERSION OF FIBRES INTO FINISHED YARNS

(A)—Preparatory Processes

"Unifil" Loom Winder. ("Automatic Filling Winder Is Attached to Loom.") Universal Winding Co. *Text. World*, 1950, **100**, No. 6, 137-138. A single-head automatic weft winder to be mounted directly on single-shuttle looms is announced. The unit automatically carries out the winding of bobbins, stripping of bobbins ejected from loom, and transference of empty bobbins to the winder head. An illustration of the unit is shown. C—**2A.**

Brampton's Wool Storage Bins. Brampton Woolen Company. *Text. Industr.*, 1950, **114**, No. 8, 91. The storage bins described can store sufficient wool for twenty-four hours of card operation. The bins have steel Dutch doors which consist of two units horizontally divided so that the upper part may be opened while the lower part may remain closed to act as a barrier. The interiors are of glazed brick and smooth surfaced concrete blocks, and the floors are of cement. W—**2A.**

Woollen Carding and Spinning: Modern Developments. I. Marsden. *J. Textile Institute*, 1950, **41**, P650-659. Modern developments in woollen carding and spinning are discussed, including recent improvements in America and Great Britain. W—**2A.**

Flax Dressing Machinery: Management and Maintenance. S. A. G. Caldwell. *Text. Mfr.*, 1950, **76**, (June), 268-270. Judgment of fibre quality, keeping of progress records, improvement in scutching mills, and automatic hackling are discussed. Stress is laid on the correct feeding of hackling machines, and accuracy of pin intersections and roller settings. L—**2A.**

Flax Pulling Machine. *Linen Trade Circ.*, 1950, **36**, August 12, 17. At a demonstration held at Quainville Seine Inf., favourable comment was made regarding the new flax pulling "Union" machine, which was being shown for the first time. L—**2A.**

(B)—Spinning and Doubling

Cotton Spinning: Roving Defects. R. H. Pharr. *Textile World*, 1950, **100**, No. 6, 135, 210, 212. Eight roving defects (oily roving, dirty roving, doublings, singlings, cut roving, fly-gouts-trash, hard ends, improper package) with possible remedies are briefly discussed. C—**2B.**

Rayon Staple Spinning: Current Practice. S. A. G. Caldwell. *Fibres*, 1950, **11**, 191-194. An account is given of current practice in rayon staple spinning.

Topics dealt with include opening equipment, the Kirschner beater, carding operations, flax tow and jute cards, and fibre saving devices. C—**2B.**

Bird Universal Drafting System. ("Collins and Aikman Develops a Universal Drafting System.") W. A. Newell. *Text. World*, 1950, **100**, No. 6, 89-91. Brief details, with illustrations, are given of the Bird drafting system. This system, which differs from the conventional cotton type chiefly in the roving and spinning operations, can deal with staple lengths from 1 to 9 inches for a wide range of fibres. C—**2B.**

"Parcofil" Double-twist Spindle. Parcofil Textile Machinery Makers, Ltd. *Silk & Rayon Rec.*, 1950, **24**, 957. A new double-twist spindle for silk and rayon crêpe, cotton, nylon and Perlon, is briefly described. A stationary delivery bobbin is housed, on the spindle, in a stationary metal container underneath which is a revolving disc. The stationary part is prevented from turning by use of powerful permanent magnets. A first twist is given as the thread passes through a hollow shaft in the spindle, and a second twist as it leaves a slit in the revolving disc. The spindle speed is 15,000 r.p.m. giving up to 30,000 twists per minute. Illustrations of the spindle in action are shown. C—**2B.**

Spinning: Work Loads. ("Are You Assigning Work Loads Fairly?") H. P. Lynch. *Text. World*, 1950, **100**, No. 6, 92-93. Factors (especially end breakage) that affect the work load of spinners are considered in order to aid the drawing up of work schedules for operatives. C—**2B.**

Endless Elastic Belts. ("New Type for Mule and Roving Spindles.") Flexicon Ltd., Bradford. *Wool Record*, 1950, **78**, 591; *Text. Mercr.*, 1950, **123**, 264. Information is given relating to a provisional patent. The bands are manufactured with two parallel flat surfaces so that the cross section resembles a flat-sided oval. This construction serves to eliminate twisting or "rolling" of the band while running and so increases the working life of the belts. A loom heald strap is also described. W—**2B.**

Flax Spinning. Part II. Machinery and Equipment. Chap. V. Carding. A. V. Pringle. *Fibres, Fabrics and Cordage*, 1950, **17**, No. 7, 218-223. Various forms of roller clothing and their respective merits, and roller drive are described. Gearing calculations are given. L—**2B.**

Flax Spinning. Part II. Machinery and Equipment. Chap. V. Carding. A. V. Pringle. *Fibres, Fabrics and Cordage*, 1950, **17**, No. 8, 262-266, 271. Drawing heads and special fittings to cards, *e.g.*, automatic feeders, are described with particular reference to drives, clutch, and weighing arrangements. Types, gearing calculations, leads of feed and delivery rollers and of gill bars, draft of head, and can motions, are discussed in relation to drawing heads. L—**2B.**

(C)—Subsequent Processes

Quality Winding Techniques. K. H. Inderfurth. *Papers Amer. Ass. Text. Technol.*, 1949, **5**, 22-27. A discussion of winding techniques is presented dealing with the precision winder and weft winder for continuous filament yarns and the drum winder for natural and spun-rayon yarns. Topics include tension, number of winds, coning, type of package, tension devices, weft winding, nylon p rming and headless package uptwisting. C—**2C.**

(D)—Yarns and Cords

"Botanyl". *Hosiery Ind. Wkly.*, 1949, **56**, (23), 4. Note on "Botanyl", wool/nylon yarn manufactured by Botany Mills for men's socks. H—**2D.**

"Meralon". Clarence L. Meyers & Co. *Hosiery Ind. Wkly.*, 1949, **46**, (14), 1. "Meralon", new synthetic yarn containing rayon and a small proportion of nylon, is in experimental production, and is designed for use in half-hose, *etc.* H—**2D.**

Nylon Staple Yarns. *Hosiery Ind. Wkly.*, 1950, **58**, (2), 1, 14. Note on two new yarns produced by Aberfoyle Manufacturing Co.—a nylon staple yarn spun on the cotton system, and a nylon staple/cotton blend. H—**2D.**

3—CONVERSION OF YARNS INTO FABRICS

(A)—Preparatory Processes

High-speed Sectional Warping and Beaming Machine. Knowles and Co. *Text. Rec.*, 1950, **68**, July, 80-81; *Brit. Rayon & Silk J.*, 1950, **27**, August, 59-60. A brief illustrated description is given of a new high-speed sectional warping and

beaming machine. Warps up to 5,000 yards in length may be produced, with a maximum speed of 800 yards per minute. Other features include electrical speed and measuring controls, hydro-electric braking, electrical stop-motions, and ball bearings with modern lubrication. C—**3A.**

Whitin Bobbin Tester. *Canad. Text. J.*, 1950, **67**, No. 17, 60. Details are given of a bobbin tester designed to control the general level of bobbins, pirns or spools in regard to concentricity of the outside with the inside holes. The machine can handle practically every type of bobbin or spool and can be set up, taken down and set up for a different bobbin in less than a minute. W—**3A.**

Warping: An Improved System; Precision Control of Yarn Tension. *Text. Merc.*, 1950, **122**, 848-850. An account of experiments carried out in a fine worsted mill at Huddersfield in co-operation with machinery makers and the Wool Industries Research Association. A Hattersley horizontal warping machine with solid swift works in conjunction with a Holt travelling single-end type cone creel. The creel is fitted with the Williams-Gill automatic creel moving device, and the warping machine with the Williams-Hattersley tension gauge. W—**3A.**

Woollen and Worsted Yarn Manufacture. (I—"Reeling and Quality Production.") *Wool Record*, 1950, **78**, 269, 271-2, 275. A general article describing a typical reel, the arrangement of the bobbin holders, and the process of reeling. The value of experience in reeling and some of the faults encountered are also discussed. W—**3A.**

Woollen and Worsted Yarn Manufacture. (II—"Winding." Part One.) *Wool Record*, 1950, **78**, 359, 361, 363. Factors contributing to the production of well wound cones and cheeses are summarised. The split drum type winder is described and reasons for its popularity are stated. The necessity for eliminating slubs in worsted yarns and snarls in woollen yarns is stressed, and the slub catching device is described. Other subjects discussed include the method of applying and varying the degree of tension on yarns, some effects of excessive tension, and conditioning of yarn. W—**3A.**

Woollen and Worsted Yarn Manufacture. (III—"Winding." Part Two.) *Wool Record*, 1950, **78**, 433, 435, 437. The requirements of the perfectly wound cheese and cone are described, and mechanical details of the various machines which produce them are given. Some production figures for different types of yarn are included. Improving the appearance and handle of yarn is also mentioned. W—**3A.**

(C)—WEAVING

Warp Tension. D. C. Snowden. *J. Textile Institute*, 1950, **41**, P237-249. The reasons for applying warp tension during weaving are stated and control of the warp during weaving is discussed. Methods of measuring warp tension are described and details of a special instrument, a form of tensiometer, are given. The effect of warp tension on the properties of woven fabrics is summarised. Methods of comparing the weaving difficulty of fabrics differing in yarn construction, sett, or weave interlacing are discussed and results of experiments applying these methods are given C—**3C.**

Multi-sectional Loom with Centrifugal Weft Supply. Anon. *Text. Rec.*, 1950, **68**, July, 78-79. An entirely new type of weaving machine which has been recently invented is briefly described. Known as a weaving turbine or sectional loom with centrifugal weft supply, the new loom combines the characteristics of the circular and the conventional loom with other novel features. It consists of four straight-sided sections arranged for vertical weaving grouped round a common driving shaft. Weft supply consists of large cross-wound cones carried on four creels, the weft being inserted by means of shuttles which are projected across the warp sheet by a centrifugal impeller. C—**3C.**

Figured Double-plain Fabrics: Design and Production. A. T. C. Robinson. *Silk & Rayon Rec.*, 1950, **24**, 930, 936, 938, 941, 942, 944. Instructions, with working diagrams, are given for the weaving of various types of double-plain fabrics. Both dobby and jacquard designs in flat and relief constructions are described. C—**3C.**

Irregular Weft Yarns: Efficient Mixing. D. C. Snowden and J. Sidi. *J. Textile Institute*, 1950, **41**, P507-525. A comparison of a range of boxing and

picking plans is discussed, using from 1 to 7 shuttles on looms with multiple boxes at one side only, and looms with multiple boxes at both sides and picking-at-will. Cloths were woven with white woollen warp, the weft being either black specially spun to 5 different counts or coarse navy of one count. An examination of the cloths indicates that, to eliminate weft bars because of cop-to-cop variation of yarn count, more than one shuttle should be used for weft insertion. Streaks due to short term irregularity in the weft were not concealed by weft mixing. The best orders of weft mixing as regards reducing streakiness in the cloth are suggested. W—**3C.**

Seamless Wilton Carpet: Manufacture. A. Crossland. *Text. Mfr.* 1950, 76, 363-368. A description of 2-shot and 3-shot weaves, and of the special features of a cordage type Jacquard machine (Boucher & Co. Ltd.) and of a seamless Wilton loom (Wm. Smith & Bros. Ltd.). Double beat-up, picking, take-up, let-off and wire motions are described. W—**3C.**

(D)—KNITTING

Knitting Machinery: Progress, 1936-1950. J. B. Lancashire. *Textile Rec.*, 1950, **67**, April, 64-67; May, 82-84; June, 79-81; July, 75-76; (*to be contd.*) Developments in knitting machine construction since 1936 are briefly discussed. Circular machines for plain, fancy, interlock, and jacquard knitting are dealt with and several modern circular machines are shown. Full-fashioning machinery is discussed with particular attention to heeling machines (*e.g.* the Mellor-Bromley Anto-heeler). The Mellor-Bromley Twin Knitter and Cotton's patent multi-section machines are also mentioned. The trend towards finer gauges in hosiery yarns is noted. Full-fashioned underwear and knitwear machines are dealt with briefly. A discussion of warp knitting deals with warp preparation, knitting machinery, latch needle looms, and weft insertion. Flat bar machines, classified as V-type machines and flat purl machines, are briefly surveyed. C—**3D.**

1×1 Rib Fabrics: Production on Single-cylinder Machine. H. Wignall. *Text. World*, 1950, **100**, No. 6, 114, 115. Brief, illustrated details are given of the procedure used to produce 1×1 rib fabrics on single-cylinder knitting machines. Some applications of the method are indicated. C—**3D.**

Warp Knitted Fabrics: Representation of Structure. ("Warp Knitting Technology. IV.") D. F. Paling. *Brit. Rayon & Silk J.*, 1950, **27**, June, 54-56. Continuing his articles[1] on the structure and production of warp knitted fabrics, the author deals with the diagrammatic representation of structure for use in setting up the knitting machines. The construction of such diagrams is described with examples, and the setting of the pattern chains explained. The production of single bar fabrics is discussed briefly. ([1] *J. Textile Institute*, 1950, **41**, A413.) C—**3D.**

Latch Needles: Setting. *Hosiery & Underwear Rev.*, 1950, **33**, (6), 132-3. Describes the "Knitmaster" needle gauge, designed to give quick and accurate needle setting on latch needle machines; the gauge is equipped with a Decker point to attach to the latch needle, and a dial which is graduated from 5/1,000 of an inch to half an inch. A new type of needle cleaner which combines cleansing properties with lubrication is also described. Illustrations. H—**3D.**

Electronic Devices: Use in Hosiery Industry. *Hosiery Times*, 1950, **23**, (251), 23. Note on electronic device in experimental use in a Leicester hosiery factory to eliminate manual cutting of chain on flat-lock machines. The device comprises a photo-electric cell which operates a guillotine when material passes across the beam of light falling on it. H—**3D.**

Nylon: Effect on Hosiery Manufacture. *Hosiery & Underwear Rev.*, 1950, **33**, (4), 164-6, 202-3. Discusses the effect that the introduction of nylon has had on stocking manufacture. Special reference to single unit machines, pre-boarding, and the trend towards high gauges. Illustrations. H—**3D.**

Komet Links-Links Machine. J. B. Lancashire. *Hosiery Times*, 1950, **23**, (251), 51-5. Describes the Komet models LL and LT, built by the Bentley Engineering Co., of Leicester, for the manufacture of hosiery incorporating fancy purl and links-links designs. Selecting mechanism is provided for knitting figure designs in leg and instep on the LL model and in strips in ribbed top on the LT model: "double pattern" attachment can be applied to the latter to allow patterning in leg and instep. A new elastic feed unit ensures successful laying in of elastic yarn in ribbed top. H—**3D.**

Hosiery: Length Variation. *Hosiery & Underwear Rev.*, 1950, **33**, (2), 153-5. Note on length variations and presence of "pin-holes" in hosiery, problems which show up after dyeing. Length variations are usually caused during knitting, but may occur during pre-boarding. "Fish-eyes" also occur during knitting, one cause being excessive stripping of yarn size on to needles. H—3D.

Hosiery: Length Variation. *Hosiery Ind. Wkly.*, 1950, **57**, (10), 1, 23. Report on study of varying lengths in hosiery, carried out in a North Carolina mill on 15-denier nylon stockings knitted on eleven different machines of two different makes. H—3D.

Knitting Machine: Design. Fidelity Machine Co. *Hosiery & Underwear Rev.*, 1949, **32**, (12), 164. Note on new Hi-Speed Fidelity Multi-Design Ribber, model S-49. Advantages claimed include complete range of sizes up to 7 in., higher operating speed than previous models, ease of changing fancy fabric patterns, and setting of three different designs at once in the patterning mechanism. Illustrations. H—3D.

Hosiery: Length Variation. *Underwear & Stockings*, 1949, **3**, (10), 6-7. Discusses variation in length of hosiery, which is affected by the ultimate loop length and thus by the yarn tension. Even when tension of unwinding from the package is controlled, variations occur owing to differences in humidity and temperature, and in the speed of the machine which increases after it has been running for a while. Alteration in leg length occurring during seaming and finishing is also mentioned. H—3D.

Knitting: Process. *Hosiery Ind. Wkly.*, 1949, **56**, (16), 1, 14. New method of knitting seamless stockings to give a "measured stitch" streakless stocking; developed by Hemphill Co. and now being installed by Hames Hosiery Co. Inc.; the hosiery is marketed under the name "Lucida". H—3D.

Knitting Machine: Design. Hemphill Co. *Hosiery Ind. Wkly.*, 1949, **56**, (16), 12. New machine to be known as the Vari-Pattern, for the manufacture of men's and boys' half-hose with elastic tops. Illustrations. H—3D.

Hosiery: Raw Materials. J. B. Lancashire. ("Raw materials for stockings.") *Underwear & Stockings*, 1949, **3**, (8), 4-5. Review of the characteristic properties of cotton, silk, rayon and nylon yarns, and their influence on the appearance, wear, and price of hosiery. The different kinds of yarn obtained by various methods of twisting, *etc.*, are included in the discussion. H—3D.

Hosiery: Size Control. *Hosiery & Underwear Rev.*, 1949, **32**, (8), 123-5, 160. Summary of practical ideas in use in various mills for overcoming the problems of knitting nylon stockings to correct lengths. Points mentioned include: adjustment of knitting tension; maintenance of constant sinker clearance; avoidance of machine adjustments during knitting; use of neutral yarn for pilot run; proper conditioning of yarn before knitting; application of oil to unsized yarn during knitting to prevent shrinkage between knitting and finishing; use of yarn package of large diameter (2¼ in. as compared with 1⅞ in.); maintenance of approximately equal yarn package densities during knitting; and advice against use of the welt as a gauge of stocking length. H—3D.

Knitting Machines: Developments. A. G. Arend. ("Improvements in Knitting Machinery Procedure and Control.") *Hosiery Times*, 1949, **22**, (243), 46-7. Miscellaneous notes, including: maintenance and supervision; pre-shrinking to eliminate variation in elasticity caused by loosely knitted welts; control systems to reduce shut-downs; use of tungsten carbide for small machine parts, *etc.* H—3D.

Knitting: Welt Formation. H. Wignall. ("Second Thoughts on Auto Welts.") *Hosiery Times*, 1949, **22**, (244), 33-4. Describes steps in automatic and hand welt turning, and compares the efficiency of the two methods. Automatic welting is more productive, does not require workers skilled in this operation, and removes tendency to needle damage. Diagrams. H—3D.

Nylon Hosiery: U.S. Production. *Hosiery & Underwear Rev.*, 1949, **32**, (9), 143-5, 156-7. Notes on production facilities for 60-gauge stockings, retail prices, styles available and special characteristics—sheerness, wear-resistance and snag-resistance; also plans of various mills for the manufacture of 66-gauge constructions. H—3D.

Nylon: Employment in Half-Hose. *Hosiery Times*, 1949, **22**, (248), 20. Note on increasing production of nylon-spliced half-hose, and the introduction of all nylon socks. H—**3D.**

Silk: Use in Hosiery. *Hosiery & Underwear Rev.*, 1950, **31**, (9), 58-60. Discussion of the status of silk, arranged in the form of questions and answers on such topics as the current production of silk hosiery, increase in production rate, availability of silk in the proper grades and deniers for knitting, the use of silk in welts and foot structures, throwing facilities, prices, equipment, *etc.* H—**3D.**

Jacquard Knitting. R. K. Bak. *Knitted Outerwear Times*, 1950, **18**, (23), 3, 7. Discusses the principles of jacquard mechanisms and the types of knitted fabrics which may be produced with them. Diagrams. H—**3D.**

Nylon Hosiery: Manufacture. *Hosiery & Underwear Rev.*, 1950, **33**, (8), 132-3, 154. General discussion of points to be observed in maintaining efficient production of nylon hosiery, including reference to yarn storage and conditioning. H—**3D.**

Intarsia Designs. J. Rab. *Knitted Outerwear Times*, 1950, **18**, (28), 9, 29, 32. Discusses the principles of making intarsia designs on flat-bed machines. Diagrams. H—**3D.**

Half-hose: Design. *Hosiery Times*, 1950, **23**, (250), 55-6. Notes on trends in half-hose design with particular reference to increased use of nylon splicing demanded by the American and Scandinavian markets, and to colour. H—**3D.**

(F)—Subsequent Processes

Hosiery: Marking. *Hosiery & Underwear Rev.*, 1950, **33**, (3), 141-3, 160-2. Reviews the recent developments in the use of perforation for marking gauge, denier, *etc.*, on stockings, and for making lace designs. Perforating attachments for use on fully-fashioned machinery, and independent machines for perforating finished hosiery are described. Illustrations. H—**3F.**

Cloth Measuring Machine. S. Balaban. *Text. Merc.*, 1950, **123**, 260; *Text. Weekly*, 1950, **46**, 402; *The Dyer*, 1950, **104**, 235; *Wool Record*, 1950, **78**, 683. A machine designed for measuring and re-rolling wool fabrics is described. Sixty yards can be measured in 3-4 minutes, and the time of working from start to finish is under five minutes instead of manual working of 45 minutes. The cloth is handled twice. The machine, which is made of steel, has aluminium rollers, and is 5 ft. square. W—**3G.**

4—CHEMICAL AND FINISHING PROCESSES

(A)—Preparatory Processes

Surface-active Textile Auxiliaries. A. J. Hall. *Silk & Rayon*, 1950, **24**, 230, 233, 235, 237; 372, 374, 376, 378; 504, 507, 508, 510; 646, 650, 654; 780, 782, 784; 922, 926, 929; (*to be contd.*). The development of textile auxiliaries is briefly traced. Most auxiliaries have a common type of molecular structure and this is described for the ionic agents—anion-active and cation-active. Non-ionic types are also mentioned. Some of the wide range of uses of surface-active agents in the textile industry are indicated. A list of modern textile auxiliaries is given with a short description of each agent and its uses. C—**4A.**

Textile Auxiliaries. Anon. *Fibres*, 1950, **11**, 213-219. An account of the development, chemical structure, properties, classification and uses of some textile auxilliaries is presented. C—**4A.**

Nylon: Pre-setting. *Hosiery & Underwear Rev.*, 1949, **32**, (10), 177-8. Note on use of hot water in place of steam to pre-set nylon hosiery: the process is a modification of the Dunn System, the stockings being pre-set in the grey, and in the flat state, before looping and seaming. Snagging during subsequent handling is said to be reduced, and looping and seaming operations are said to be made easier. H—**4A.**

Nylon: Pre-boarding. *Hosiery & Underwear Rev.*, 1950, **33**, (3), 153, 165. Note on "Check Test" manual pre-boarding machine, which has a capacity for six stockings at a time and is designed to enable the manufacturer to estimate on stockings in the grey how they will appear after pre-boarding. The machine may also be used by dyers for checking shades. H—**4A.**

Nylon Yarn: Deep-freezing. *Hosiery Ind. Wkly.*, 1950, **57**, (17), 1, 20. Note on method of "deep-freezing" nylon yarn claimed to give more uniform knitting, fewer "press-offs", fewer snarls, better "handle", and easier seaming. H—**4A.**

(D)—MILLING

Milling Wool/Nylon Goods. *Dyer*, 1950, **104**, 309-311. The amount of nylon in the material described is not large and is intended to give a brightening effect to the cloth. A covered finish is difficult to obtain on a prunelle. The method of scouring this type of fabric using a potash soap is outlined. The milling operation requires two or even three stages, and the trough area of the milling machine should be fully utilised. Soda soap is used and the goods are not over-soaped. The milling medium is applied frequently in small quantities, since artificial fibres dry out more quickly than wool. Light scouring follows the milling operation. Details of subsequent finishing processes are included. W—**4D.**

Cloth Milling. R. Zelinka. *Textilber.*, 1950, **31**, No. 1 E (June) (English Edition), 27-28. A general review of milling. The subjects discussed include the composition of the blend; yarn and cloth structure; spinning lubricants; *pH*, volume and temperature of milling liquor, *etc.* Some remedies for faults, including mill-riggs, are suggested. W—**4D.**

(H)—MERCERISING

Mercerisation: Density Recording Instrument for Caustic Bath. ("Less Costly Mercerization Possible Through New Instrument.") R. C. Scott. *Text. World*, 1950, **100**, No. 6, 106-107. A "Densitrol" liquid-density indicating and recording instrument has been installed to measure the density variations in the mercerising bath of an American plant. Great savings in raw materials by its use are reported. The principle of the instrument is briefly described. C—**4H.**

(I)—DYEING

Nylon Hosiery: Recent Developments in Wet-processing. H. L. DeTurck. *Amer. Dyest. Rep.*, 1950, **39**, 404-408. An account is given of the problems of dyeing nylon hosiery made from multifilament yarn, 15-denier monofilament yarn, and 20-denier monofilament yarn. Experimental data are presented. Resin finishing emulsions for the production of snag resistance and a full hand are compared. The need for new dyes for nylon is emphasised. C—**4I.**

"Standfast" High-speed Vat-dyeing Process. ("Molten-Metal Dyeing Perfected in England.") F. Brewster. *Text. World*, 1950, **100**, No. 6, 94-95, 182, 184, 186. Details of the process are given. (See also *J. Textile Institute*, 1950, **41**, A323.) C—**4I.**

Dyebath Control Instruments. R. W. Moncrieff. *Fibres*, 1950, **11**, 37-40, 117-118; 207-211; (*to be contd.*). Continuing his series of articles[1] on textile instruments, the author deals with instruments for dyebath control. The advantages of automatic control are discussed and the Bristol's Dyemaster automatic control system is described and illustrated. Brief details are given of the hosiery dyemaster, the Cambridge valve and regulator for control of flow of steam, time-temperature recorders, and Drayton dye vat regulators (types DV1, DV1T, and DV3). Illustrated descriptions are also given of the Foxboro hosiery dye-machine controller, the "Fulscope" process time controller, and the "Fulscope" time schedule recording controller. ([1]*J. Textile Institute*, 1950, **41**, A82.) C—**4I.**

Wool: One-Step Stripping Process. M. Harris and L. W. Rainard. *Amer. Wool and Cotton Rep.*, 1950, **64**, No. 34, 13-14, 18. In the Harristrip process ethylene dibromide is added to the hydrosulphite or sulphoxylate stripping solution, the cross-linkages in the wool thereby being stabilised. The method is cheaper and quicker and the material remains essentially unchanged in strength after subsequent dyeing. The method does not reduce the shades to an absolute white, but it does significantly increase the whiteness, and the treated fibres are firm, strong, resilient and retain a desirable handle. W—**4I.**

Wool Dyeing: Fastness to Rubbing. ("Methods of Improvement.") *Wool Record*, 1950, **78**, 831, 833, 835. Dye which is liable to rub is chiefly that which remains on the surface of the fibre, *i.e.*, where there has been lack of penetration. Poor fastness to rubbing is most likely to occur in wool dyed with dyes which are fast to wet treatments because of their insolubility in water. Some precautions which improve the fastness to rubbing of these dyes are given. When

correctly dyed, acid dyes do not give rise to rubbing defects. The effect of hard water and the importance of efficient scouring are discussed. W—**41.**

Nylon Hosiery: Dyeing. *Hosiery & Underwear Rev.*, 1949, **32**, (9), 165-8. Notes on problems in dyeing novelty constructions, including silk heel and toe on nylon stocking, monofilament stocking with multifilament welts and splicing, crêpes, *etc.* H—**41.**

Nylon Hosiery: Dyeing. S. G. Turnbull. ("Dyeing and Finishing of Nylon Hosiery.") *Hosiety Ind. Wkly.*, 1949, **56**, (2), 28-9. Review of pre-boarding scouring, dyeing and finishing processes for nylon hosiery. Discusses choice of dyestuff, usually acetate type, which must be free from dermatitis-causing compounds as well as being fast to light and washing: special problems involved in dyeing hose having monofilament leg yarns and multifilament welt yarns, and those containing highly delustred leg yarns, are discussed. Acid or chrome dyeing of yarn for men's and children's nylon hose, and dyeing of blends of nylon with cotton or rayon are also mentioned. H—**41.**

Nylon Yarn: Dyeing. *Hosiery & Underwear Rev.*, 1949, **32**, (8), 147-8. Discussion of package dyeing of nylon yarn, which is assuming importance in view of the use of spun nylon in fancy patterns in men's hose, *etc.* Dyes used must withstand pre-boarding temperature: high fastness is obtained by package dyeing with chrome colours at high temperature and pressure: advantages of package dyeing over skein dyeing include elimination of winding costs and yarn irregularities caused in winding: package dyed spun nylon will dry in 20 minutes. Developments in dyeing equipment, importance of proper winding, and use of softeners are also discussed. H—**41.**

Nylon/Cotton: Dyeing. *Hosiery & Underwear Rev.*, 1949, **32**, (10), 176. Notes on vat dyeing of nylon hose having cotton reinforcements, with reference to du Pont process: another chemical (not named) is added to aid distribution of the dye. Wash fastness is reported to be good. The process may be applied to dyeing of nylon hose reinforced with rayon. H—**41.**

Nylon Hosiery: Dyeing. *Hosiery & Underwear Rev.*, 1949, **32**, (12), 151-5. Notes on hosiery dyeing developments including use of vat colours for nylon socks and research on dye-resistant nylon yarn for identification stripes, seams, novelty heels, *etc.* in women's hosiery. H—**41.**

Nylon: Dyeing. *Hosiery & Underwear Rev.*, 1950, **33**, (3), 151-3, 165. Discusses the experimental work now being carried out on 10-denier monofilament nylon hosiery and the problems of handling and dyeing the new yarn. H—**41.**

Rayon Hosiery: Dyeing. J. K. Novins. *Hosiery & Underwear Rev.*, 1950, **31**, (9), 143-5. Brief review of the problems encountered in the dyeing of rayon hosiery. H—**41.**

(J)—PRINTING

Textile Printing: Application of Pigmented Emulsions. D. Cimma. *Papers Amer. Ass. Text. Technol.*, 1949, **4**, 107-108. Some of the properties and advantages of pigmented emulsions for textile printing are indicated. Examples of typical prints are shown and a discussion on the subject is reported (*ibid.*, pp. 109-110). C—**4J.**

(K)—FINISHING

Fabric Finishing: Application of Resins. R. M. Fischer. *Brit. Rayon & Silk J.*, 1950, **27**, June, 60-61. Progress in the application of synthetic resins in fabric finishing is outlined. Urea-formaldehyde, melamine, and thermoplastic resins are mentioned to illustrate the scope of fabric finishing. Crease-resistance testing is briefly discussed. Some problems and possibilities of modern finishing agents are briefly considered. (See also under 4(L).) C—**4K.**

Nylon Knit Fabrics: Controlled Finishing. A. J. Nisbet. *Papers Amer. Ass. Text. Technol.*, 1949, **5**, 11-14. The shrinkage and setting of nylon is considered in general and a process of controlled finishing for nylon goods known as "Trianizing" (a process of pin-stentering the fabric and heating to near the melting point of nylon by means of hot air or gases) is briefly described. Various aspects of this process are brought out in a discussion that is fully reported (*ibid.*, pp. 15-21). C—**4K.**

Textile Dyeing and Finishing Plant: Automatic Process Control. L. Walter. *Text. Rec.*, 1950, **68**, June, 71-72; July, 64-66; (*to be contd.*). Some aspects of automatic process control in textile dyeing and finishing operations are discussed. General principles underlying the application of automatic controllers are indicated and some typical applications described. These include thermostatically controlled steam supplies, process and time control, and automatic mixing valves. C—**4K.**

Wool: Chemical Technology. J. L. Stoves. *Fibres*, 1947, **8**, 302-305, 407-409, 1948, **9**, 50-52, 188-190, 305-306, 377-379; 1949, **10**, 81-83, 259-261, 391-394, 440-443. Literature on the following subjects is reviewed: structure of the wool fibre; action of water on wool; carbonising; principles and problems of scouring; milling; the unshrinkable finish; the setting process; mothproofing; measurement of damage by physical and chemical methods. W—**4K.**

Clothing Raising: Research. *Wool Sci. Rev.*, 1950, No. 6, 21-30. A discussion of yarn construction, cloth structure and raising conditions and their effect on the raising process. Recent laboratory methods for estimating the degree of raising are described. W—**4K.**

Nylon: Finishing. *Hosiery & Underwear Rev.*, 1949, **32**, (10), 175-6. Note on "Externalure X99" (Onyx Oil and Chemical Co.), a resin finish for high-twist nylon hosiery, designed to eliminate curling ("creepiness"). H—**4K.**

"Nylonizing". *Hosiery & Underwear Rev.*, 1950, **33**, (6), 66. Discusses the "nylonizing" process developed by H. C. Bick Inc. for the finishing of nylon hosiery. Stockings treated with this finish are claimed to have the warmth, absorption and fit qualities of silk, and to have a dull finish and good snag resistance. Application to nylon underwear fabrics is being investigated. H—**4K.**

(L)—Proofing

Antioxidant 2246. American Cyanamid Company. *Calco Tech. Bull.*, No. 815, 23 pp. Technical information is given for a new antioxidant or age-resistor for rubber, known as "Antioxidant 2246". This preparation is described as bis-(2-hydroxy-3-*tert.*-butyl-5-methylphenyl)-methane, m.p. 120°-130° C. The data given refer only to natural rubber. C—**4L.**

Shrink-resistance: New Melamine Resin Treatment. R. M. Fischer. *Text. World*, 1950, **100**, No. 6, 129, 190, 192, 194. A new method of applying melamine resins to wool eliminates the need for high temperature treatment. The wool is treated at room temperature with an acid colloid of a partially polymerised melamine resin. The process is briefly described and reference is also made to the wrinkle resistance treatment of cotton and of the measurement of crease resistance. C—**4L.**

(M)—Subsequent Processes

Hosiery Marking Machine. *Hosiery & Underwear Rev.*, 1950, **51**, (9), 152-4. Note on machine manufactured by Perma-Print Co., for printing on fully-fashioned hosiery welts. Illustration. H—**4M.**

Labelling Machine. *Hosiery & Underwear Rev.*, 1950, **31**, (9), 154-6. Note on heat-sealing labelling machine for underwear, developed by B. Applebaum and Son. H—**4M.**

Patents

Felt Hat Manufacture. Oldham & Fogg Ltd., J. A. Oldham and E. Oldham. B.P.640,881 of 2/8/1950. Blocked and steamed felt hats are sprayed at relatively low pressure with a rubber adhesive and then with fibre flock. The surface may be hot pressed before and/or after spraying with the adhesive, and may be given a glossy surface finally by polishing. The process is primarily intended for the interior of unlined hats. W.

Animal Fibres: Cleaning. M. Levin. (1) U.S.P.2,508,406, (2) U.S.P.2,508,407, both of 23/5/1950. (1) Animal fibres are cleaned by soaking in a sulphuric acid-ketone mixture containing not more than 20 per cent. water. The ketone inhibits ionisation of the sulphuric acid solution. The treated fibres are heated to drive off the ketone and char the vegetable matter; the charred vegetable matter is mechanically removed, and the sulphuric acid is neutralised, preferably with triethanolamine. The solvent is recovered for further use; wool grease (95-100 per cent.) is also recovered; the dry sediment is a valuable fertiliser. The fibres are not damaged, paint and tar are removed and pieces of hide or skin

are destroyed. (2) Animal fibres are cleaned by soaking in a conc. hydrochloric acid-ketone mixture containing not more than about 8 per cent. water. The same claims are made as for (1). W.

Mothproofing Compounds. Nederlandsche Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek ten behoeve van Nijverheid, Handel en Verkeer. Dutch P.65,103 of 16/1/1950 (through *Chem. Abs.*, 1950, **44**, 6078). Wool, fur, *etc.*, are mothproofed by treatment with organic mercury compounds RHgX, in which R is an aliphatic, alicyclic, aromatic, or heterocyclic radical and X is OH or an acid radical. Examples are phenylmercuric acetate (0·1 per cent. and 0·05 per cent. on wool is effective in standard tests) and (acetoxymercuri)pyridine (slightly less active). Mothproofing may be combined with dry cleaning. To improve washability, an after-treatment may follow with a solution of sodium chloride or soap; the resulting phenylmercuric chloride or stearate was so well attached to the fibres, that 10 washings with soap and soda at 40° had no influence on the proofing agent. W.

5—ANALYSIS, TESTING, GRADING AND DEFECTS

(A)—Fibres

Cotton Fibres: Measurement of Fineness by Air-flow Methods. H. M. Brown and J. S. Graham. *Text. Res. J.*, 1950, **20**, 418-425. Using cottons of an extremely wide range of fibre development, a study has been made of the air-flow method of measuring fineness and maturity of the lint. The theory of the methods and experimental procedure are briefly described, and results are presented. The data show that when porosity meters are calibrated in fineness, the curves for different varieties of cotton are quite different. This is due to the fact that resistance to air-flow through a fibre plug correlates more closely with the surface area of the fibres composing the plug than with their fineness. This surface area varies with variety and maturity, independently of the fineness of the cotton. For several cottons, the air-flow data published by the U.S. Department of Agriculture for the 1948 crop are compared with the previous 10-year averages for fineness, which had been measured by counting and weighing the fibres. C—**5A.**

Fibre "Fineness": Comparison of Measurements. E. W. S. Calkins. *Text. Res. J.*, 1950, **20**, 426-433. A home-made air-permeability fibre-fineness tester has been checked against an "Arealometer" and an air-permeability instrument in another laboratory. An excellent correlation of results is reported, and it is concluded that any instrument of this type if properly calibrated is capable of measuring surface area quite satisfactorily. It is shown that fibres with the same surface area are most alike in appearance and ought to be more alike in their spinning behaviour than those selected for uniformity by any other fineness measurement. A chart is given from which any two of the four fineness variables, fibre perimeter, wall thickness, surface area, and weight per inch, can be read if the other two are known. C—**5A.**

Cotton: Deterioration; Analytical Determination. O. Heim. *Amer. Dyest. Rep.*, 1950, **39**, 417-418. A brief account is given of a simple analytical procedure, using a special aqueous reagent (a double-concn. sodium zincate solution is used; after addition of water and urea, the final reagent is 10 per cent. caustic soda, 4·5 per cent. zinc oxide, and 10 per cent. urea) that can dissolve degraded cellulose, for determining the location and extent of damage that cotton has incurred in processing. C—**5A.**

(A)—Fibres

Wool Fibre Fineness: Estimation. ("Film Strip Facilitates Rapid Estimation of Wool Fiber Fineness.") E. M. Pohle. *Text. Industries*, 1950, **114**, No. 8, 98-102. Information is presented regarding the development and use of a film strip for the rapid determination of fineness and uniformity in wool and wool top where a working accuracy (rather than precise calculations) is sufficient. Photomicrographs of fibres in cross section magnified 500 diameters are photographed on to a 35-mm. film strip. These are compared with standard film strips. The varying degrees of uniformity are expressed on the film by standard deviation in microns, and mean diameter data are also included. The equipment consists of a device for making cross sections of fibres, a 35-mm. projector, and a vertical or horizontal type of microprojector which is provided with objectives to give a

500-diameter magnification. It is suggested that the rapid comparator method may be used in conjunction with the Micronaire instrument for estimating fineness. W—**5A.**

Animal Fibres in Forensic Science: Significance. J. L. Stoves. *Fibres*, 1950, **11**, 59-60, 105-108. Legal cases are instanced in which the identification of certain fibres has proved of importance. Some methods of identifying animal fibres are described. W—**5A.**

Wool as an Apparel Fibre. G. E. Hopkins. *Text. Res. J.*, 1950, **20**, 592-603. The factors of appearance, handle, maintenance and serviceability, and protection of clothing are analysed, the specific fibre properties involved being discussed with particular reference to the advantages of wool. These properties are then compared in the common fibres which are commercially available. W—**5A.**

Single Fibres: Testing. A. J. Farnworth. *Text. J. Australia*, 1950, **25**, 424-427. Techniques directly useful to the industry are reviewed, *e.g.*, the measurement of tensile strength and extension by means of the Cambridge fibre extensometer, and the measurement of setting by Speakman's method. W—**5A.**

Wool: Testing the Raw Material. W. R. Lang. *Text. J. Austral.*, 1950, **25**, 421-424. A summary of methods for testing the moisture content, yield, fineness and length of wool fibres. W—**5A.**

(B)—YARNS

Artificial Yarns: Defects; Identification. J. B. Goldberg. *Text. World*, 1950, **100**, No. 6, 108-110, 208, 210. Some microscopic methods for the identification of defects in artificial yarns are discussed. Defects due to denier variation, filament count variation, twist, abnormal cross-sections, lustre variation, tensile strength, and broken filaments are briefly dealt with. Some examples are illustrated. C—**5B.**

Yarn Irregularity: Causes, Measurement, and Effects. Anon. *Text. Rec.*, 1950, **68**, July, 61-63; August, 65-67; *Text. Mfr.*, 1950, **76**, 315-320; 379-485; *Brit. Rayon & Silk J.*, 1950, **27**, June, 50-51. Summaries are given of the papers presented at the Textile Institute Conference on the "Causes, Measurement, and Effect of Yarn Irregularities." C—**5B.**

Yarn Strength Testing. A. Gray. *Text. J. Austral.*, 1950, **25**, 431-433. A discussion of methods and equipment for yarn strength testing, especially power-driven equipment of the constant-rate-of-traverse type and of the constant-rate-of-loading type. Factors to be taken into account are the moisture content of the yarn and its twist. The mean breaking strength is of less value than the range of breaking strengths for assessing behaviour in weaving. Sampling methods are briefly discussed. W—**5B.**

Nylon Crêpes: Definition. *Hosiery & Underwear Rev.*, 1949, **32**, (10), 114, 189. The National Association of Hosiery Manufacturers is undertaking a study of the application to nylon hosiery of Federal Trade Commission rules for crêpes: meanwhile, a warning has been issued to the industry on the proper labelling of high-twist nylon constructions by both producers and distributors. It is pointed out that under the F.T.C. regulations, a crêpe yarn must be a ply yarn, *i.e.*, two or more ends must be used: also the twisting given each end separately, plus the reverse twisting given the two or more ends jointly, must total a specified minimum, *e.g.*, 100 turns per inch for a "two-thread" crêpe yarn. H—**5B.**

Nylon Staple: Properties. D. H. Heckert. *Hosiery Ind. Whly.*, 1950, **57**, (2), 8, 46. Summary of paper to A.A.T.C.C. Hosiery Group. Reviews properties of nylon staple, and discusses consumer reaction to its employment, particularly in half hose. The occurrence of "pilling" and methods of preventing it are discussed. H—**5B.**

(C)—FABRICS

Resin-treated Fabrics: Chlorine Retention. A. C. Nuessle and J. J. Bernard. *Amer. Dyes. Rept.*, 1950, **39**, 396-403. Samples of spun-rayon fabric containing four types of nitrogenous resin were chlorinated and tested for the quantity of chlorine retained and the tensile loss during ironing. A brief comparison was made of methods of chlorine analysis. The effect of chlorination and ironing variables on the chlorine retention and tensile strength of the samples was investigated. High levels of chlorine retention result in yellowing and loss of tensile strength on ironing. C—**5C.**

Textile Manufacture: Raising Quality. ("Impact of Market Changes on Manufacturing.") R. Bouvet. *Papers Amer. Ass. Text. Technol.*, 1949, **4**, 124–128. Factors to be taken into account in raising the quality of textile goods are discussed. These include moisture regain and strength, loss of tensile strength, "shiners" (fault due to rayon yarn being stretched), cake problems, copping, and warp sizing. A brief discussion on the paper is appended (*ibid.*, p. 129). C—**5C.**

Moiré Fabrics: New Developments. H. A. Holterhoff. *Papers Amer. Ass. Text. Technol.*, 1949, **4**, 117–123. Some aspects of new developments in the moiré finishing process are discussed. A few general remarks are made on characteristics of moiré fabrics and the principles of the moiré process. New effects, fabrics, and processes are described, including the Holterhoff-(or "H-") process. A fault of scratch moiré in which no two halves of any piece look alike (known as "no-match") is dealt with. This fault is eliminated by use of the "H-" process. Finally, some points of interest to converters, *e.g.*, the "camouflaging" of certain cloth defects by application of a moiré effect, are made. C—**5C.**

Elmendorf Tear Tester: Application to Textiles. E. V. Painter, C. C. Chu, and H. M. Morgan. *Text. Res. J.*, 1950, **20**, 410–417. The Elmendorf tear tester, a pendulum type of machine, was originally designed for testing paper, but its applicability to textiles has been investigated. The magnitude of and variations in the speeds of tear obtained with the use of the Elmendorf machine have been determined. Tearing speeds of the tester have been derived from the mechanics of pendulum motion and checked experimentally with a high-speed recorder. C. C—**5C.**

Electrical Moisture Determination Instruments: Application to Textiles. J. C. Whitwell, C. F. Bowen, and R. K. Toner. *Text. Res. J.*, 1950, **20**, 400–409. Continuing previous studies[1] on the precision of various types of electrical moisture meters, meters for sheet materials have been investigated. Results are presented and analysed for the Fielden Drimeter and the Hart Moisture Meter, and cover position and tension effects. The Drimeter, which is applicable to continuously moving sheets, has a precision equal to that obtainable from ovens, while the Moisture Meter, in which the sample to be tested is clamped between the electrodes, is approximately twice as precise as are ovens. ([1] *J. Textile Institute*, 1950, **41**, A132.) C—**5C.**

Finished Piece Length: Calculation from Pattern. *Wool Record*, 1950, **78**, 751, 753. Factors affecting the assessment by analysis of the finished length of cloth are described. The subjects discussed include cotton or "Fibro" warps, the effect of slacker sett, and wet finishing processes (scouring, the effect of twist of yarn on milling, *etc.*). It is stated that it is not a good guide to weave a short length of cloth for the purpose of estimating the finished length to be expected from bulk pieces. W—**5C.**

Fabrics: Strength Testing. E. J. Schefferle. *Text. J. Austral.*, 1950, **25**, 433–5. The various types of machines for strength testing of fabrics are described, and their uses and advantages briefly discussed. W—**5C.**

Seamless Hosiery: Standards. *Underwear & Stockings*, 1949, **3**, (11), 22. The desirability of preparing a minimum quality standard for seamless stockings was discussed at a meeting of the Seamless Hose Section of the National Hosiery Manufacturers' Federation: the meeting was unanimously in favour of setting up such a standard. H—**5C.**

Hosiery: Stretch Testing. *Hosiery & Underwear Rev.*, 1949, **32**, (12), 148–9, 161–2. Main points from a recently published A.S.T.M. standard for stretch of hosiery. H—**5C.**

Nylon Hosiery: Inspection Standards. *Hosiery & Underwear Rev.*, 1950, **33**, (5), 109–14. N.A.H.M. inspection standards for women's nylon hosiery, presented at a Hosiery Industry Conference, with a foreword on the purpose and scope of the standards. Tables and photographs. Glossary of alternative terms for certain defects. H—**5C.**

Hosiery: Length. *Hosiery & Underwear Rev.*, 1950, **33**, (6), 47–9. Discusses problems involved in the practice of marking lengths on nylon stockings, both from the retailer's point of view, in maintaining a balanced inventory according to lengths, and from the manufacturers', in making accurate length measurements. H—**5C.**

(D)—Other Materials

Nylon as Filler for Phenolic Mouldings. E. E. Halls. *Plastics*, 1950, **15**, 194-196. Nylon has many advantages over wood as a filler for phenolic resin mouldings. The use of nylon as a filler is briefly discussed and comparative data are presented (insulating properties and effect of heat, water, and humidity) for wood and nylon in this respect. C—**5D.**

Ultra-speed Tensile Test Machine. D. S. Villars. *J. appl. Phys.*, 1950, **21**, 565-573. A machine has been developed which is capable of recording the stress-strain curve of rubber at rates of elongation up to 9,000 times that used in the Scott tensile test. Data are reported on two series of gum and tread stocks of Hevea rubber and on some synthetic elastomers. Full details of the machine are to be given later. C—**5D.**

Thin Plastic Films: Direct Rupture Tests. J. J. L. Chen. *Rev. Sci. Instrum.*, 1950, **21**, 491-492. A simple technique is described for making rupture tests on very thin plastic films and this may be used for evaluating the minimum practicable thickness of films to be used under prescribed conditions. C—**5D.**

Specular Gloss: Measurement. H. K. Hammond and I. Nimeroff. *J. Res. nat. Bur. Stand.*, 1950, **44**, 585-598. Specular gloss is the attribute next to colour that is most often used in the evaluation of the appearance of objects. Terms, symbols, and definitions used in glossimetry are explained and the principles of the structure of a glossmeter described. The test method of the American Society for Testing Materials for the 60° specular gloss of paint finishes has been studied. In order to determine the uncertainties involved in the calibration of gloss standards, the rate of change of gloss reading with change of aperture was investigated throughout the gloss scale. A goniophotometer was modified so that it became in effect a versatile glossmeter with provision for accurately controlling all of the known geometrical variables involved. The problem of obtaining a correction for the light reflected by diffusion from the body of the specimen (the diffuse correction) has been investigated. C—**5D.**

6—DESIGN

(A)—Textile Decoration

Knitwear: Design. W. Davis. ("Elements of Knitwear Decoration.") *Hosiery Times*, (*a*) 1949, **22**, (243), 43-5; (*b*) 1949, **22**, (246), 37-40; (*c*) 1949 (247), 31-33; (*d*) 1949 (249), 27, 31-33; (*e*) 1949 (250), 37-38, 45. (*a*) Discusses use of sewing machine stitches for decoration of knitted garments. Reference to lock-stitching, single thread chain stitch, overlock stitches in lustre rayon, raised effects formed by attaching patches of knitted fabric by lock-stitch or chain stitch, buttonholing, fastenings, *etc.* (*b*) Discusses principles of overcheck designs. (*c*) Describes types of design which can be carried out in knitted outerwear to match up with woven fabrics in twin-set and skirt ensembles. Diagrams. (*d*) Discussion of colour blends in hosiery. (*e*) Describes, with examples, method of producing ranges of colour in which the degree of tone differs between the various constituents. Diagrams. H—**6A.**

7—LAUNDERING AND DRY-CLEANING

Resins: Use in Laundering. A. G. Arend. *Chem. Products*, 1950, **13**, 310-311. The application of resins to laundering is discussed. Melamine resins have been used successfully in place of starch to make fabrics resistant to creasing and crushing. C—**7.**

8—BUILDING AND ENGINEERING

(A)—Construction and Maintenance of Buildings and Plant

Commercial Extraction Equipment. V. S. Morello and N. Poffenberger. *Ind. Eng. Chem.*, 1950, **42**, 1021-1035. The available information on commercial extraction equipment is summarised. Illustrated descriptions of various types of extractors are given and dimensional, performance, and other practical data are tabulated. [122 references.] C—**8A.**

Electrical Equipment in the Textile Industry. ("A Higher Standard of Living Electrically.") R. J. Demartini. *Papers Amer. Ass. Text. Technol.*, 1949, **5**, 35-37. The raising of efficiency in textile mills by use of electricity is illustrated by reference to a new electronic shuttle detector, *etc.* A discussion of the paper is reported (*ibid.*, pp. 38-40). C—**8A.**

Light Alloy Textile Accessories. Anon. *Brit. Rayon & Silk J.*, 1950, **27**, June, 66. Light alloy trays for cones, cheeses, bobbins, *etc.*, are described. Features include lightness, ease of handling and stacking, and resistance to corrosion. C—**8A.**

(D)—Power Transmission

Belt Drives: Maintenance. E. H. Helliwell. *Text. World*, 1950, **100**, No. 6, 112-113. Some practical hints are given for the maintenance of leather belts. Belting troubles, their causes, and remedies are tabulated. C—**8D.**

Shaft Driving: Flexible Rubber Coupling for Shafts. W. M. Halliday. *Pract. Engng*, 1950, **22**, 65-66. Practical details are given for the construction of a single shaft coupling device. The drive is transmitted from the driving to the driven shaft by means of two cone-shaped hard rubber elements connected by frictional contact with a metal casing. The coupling is flexible and self-aligning and provides overload slipping. C—**8D.**

Variable Speed Unit: "Kopp" Variator. Allspeeds Ltd. *Text. Rec.*, 1950, **68**, July, 77. Details are given of a new variable speed unit (the "Kopp" variator) for use with electric motors. An over-all speed range of 9 to 1 is obtainable. The unit has many possibilities for textile machinery and has been applied to a beam warping machine. C—**8D.**

Wool Felt for Anti-Vibration. N. B. Pope. *Rayon*, 1950, **31**, No. 9, 134, 150. Wool felt is used for anti-vibration purposes in the textile industry, especially for mounting looms. Felt pads are usually cemented to the floor and ordinarily require no protection from liquids. Vibration studies have been made for a number of machines. W—**8D.**

(F)—Lighting

Knitting Mill: Lighting. *Hosiery Times*, 1950, **23**, (252), 76. Description of lighting scheme recently installed in the knitwear factory of Foister, Clay & Ward, Ltd. H—**8F.**

Knitting Mill: Lighting. *Hosiery Times*, 1950, **23**, (254), 48. Note on installation of fluorescent lighting at the new factory of the Ulster Knitting Mills at Newtownards, near Belfast. H—**8F.**

(G)—Heating, Ventilation, and Humidification

Humidity Systems: General Considerations. T. G. Hicks. *Text. World*, 1950, **100**, No. 6, 118-119, 230. Factors that determine the rate of addition of moisture to air are indicated. The use of humidity charts for the calculation of the amount of moisture required under given conditions is illustrated by two examples. C—**8G.**

Air Compressors: Maintenance. T. G. Hicks. *Text. World*, 1950, **100**, No. 6, 104-105, 212, 214. Some information (*e.g.*, oil-feed rates) is given on the maintenance of textile milll air-compressors. C—**8G.**

(I)—Waste Disposal

Wool Dyeing Wastes: Characteristics and Treatment. J. A. McCarthy. *Sewage & Industrial Wastes*, 1950, **22**, 77-86. Report from the Lawrence Experiment Station of the Massachusetts Department of Public Health. Much of the work was done on wastes from acid chrome dyeing, but those from vat dyeing and from mixtures of acid and vat dyeing were also investigated. Wastes from wool dyeing are stronger, and have a much higher biochemical oxygen demand, than those from domestic sewage, but are much weaker than those from wool scouring. Sedimentation and coagulation are ineffective methods of treatment, because the biochemical oxygen demand is largely soluble. The waste may be treated satisfactorily on trickling filters, with loadings at least as great as those for domestic sewage. Re-circulation makes heavier loading possible. Dye wastes introduced into domestic sewage should not present insoluble problems, apart from increased loading, as long as the *pH* of the equalised effluent is not below 5·5. W—**8I.**

PATENTS

Wool Wax Alcohols: Processing. Fulmer Research Institute Ltd. and E. S. Lower. B.P.643,422 of 20/9/1950. The surface active properties and/or solubility (including colloidal solubility) in water of the mixed wool wax alcohols derived from wool grease are improved by reacting the alcohols with ethylene oxide in the presence of a catalytically active base, *e.g.*, sodium methoxide. Temperatures of 130°-170° C. are used. The alcohols are used in the cosmetic, pharmaceutical and textile industries. The invention relates particularly but not exclusively to the "Hartolan" grade of mixed wool wax alcohols. W.

Wool Grease: Extraction of Unsaponifiables. A. B. Porter (to Nopco Chem. Co.). U.S.P.2,499,877 of 7/3/1950. Crude or refined wool grease is saponified with 104-300 per cent. by weight of the alkali (preferably potassium hydroxide) theoretically required for complete saponification; in practice the actual amount used is of the order of 125-140 per cent. of the theoretical, thereby avoiding waste of materials. The saponified mass is partially neutralised with a mineral acid, *i.e.*, sulphuric, phosphoric or hydrochloric, preferably sulphuric, to obtain *pH* 8·5-11·0. The reaction mixture is then extracted with a halogenated hydrocarbon solvent, preferably ethylene dichloride. The use of a saponification catalyst, *e.g.*, isopropanol, is recommended, but is not essential to the success of the process. W.

9 SCIENCE

Cellulose in Sound and Infected Tracheids of Chir (*Pinus longifolia*): X-Ray Study. J. Sen and B. K. Banerjee. *Science*, 1950, **111**, 151. Small pieces of untreated chir sapwood, both sound and infected by *Lenzites striata*, were studied by X-rays. Photographs show that the degree of disorientation of cellulose crystallites from the tracheal axis is greater for the sound than for the infected sample. Hence cellulose orientation can be changed by means of enzymatic hydrolysis. C—9.

Maleic Hydrazide: Use as Selective Herbicide. H. B. Currier and A. S. Crafts. *Science*, 1950, **111**, 152-153. Spraying with maleic hydrazide inhibited the growth of tomato plants, stopped growth and eventually caused the death of 2-week-old barley plants and young grass plants, but 5-week-old Upland cotton was unaffected. Hence the compound could be used to destroy grass seedlings growing in cotton fields. C—9.

Dextranase: Occurrence and Assay. E. Hultin and L. Nordström. *Acta chem. scand.*, 1950, **3**, 1405-1417. In cultures of the moulds *Penicillium lilacinum* Thom, *Penicillium funiculosum* Thom, and *Verticillium coccorum* (Petch) Westerdijk, a new enzyme capable of hydrolysing dextran was found. This enzyme, dextranase, appeared only if the nutrient solution contained dextran, in addition to nutrient salts. The production of dextranase was investigated. The activity of dextranase solutions was determined by viscosimetric assay and by assay of its power of liberating reducing sugars. It was demonstrated viscosimetrically that dextranase attacks all, or almost all, of the 1:6 linkages of the dextran molecule with equal ease and does not break down the molecule from its ends. C—9.

Carbohydrates: Fermentation by *Saccharomyces*. T. N. R. Rao and V. S. Krishnamachar. *J. Sci. Industr. Res. India*, 1950, **B**, 128-130. The fermentation of 22 carbohydrates (mono-, di-, and poly-saccharides, alcohols, and glucosides) by 10 species of *Saccharomyces* has been investigated. The results are tabulated. None of the yeasts examined ferments starch or glycogen. C—9.

Maltose: Enzymic Conversion into Unfermentable Carbohydrate. S. C. Pan, A. A. Andreasen, and P. Kolachov. *Science*, 1950, **112**, 115-117. It has been shown that mould enzymes can convert maltose into some unfermentable carbohydrates. A 2·2 per cent. and a 10 per cent. maltose solution were treated with a submerged fungal culture (prepared with a variety of *Aspergillus niger*) under appropriate conditions, and samples were periodically taken and analysed for glucose, maltose, and unfermentable carbohydrate (dextrins). A part of the maltose was hydrolysed to glucose through maltase activity and another part was simultaneously converted into unfermentable carbohydrate. This carbohydrate has been isolated and its reducing powers, before and after acid hydrolysis, have been measured. The unfermentable carbohydrate can be reconverted

into fermentable sugars if these are continuously removed by yeast fermentation. Results of the investigation are summarised. C—**9.**

Algin from *Sargassum*. F. W. Davis. *Science*, 1950, **111**, 150. The algin content of the seaweed *Sargassum filipendula* was determined by extraction at room temperature. The value obtained (13·3-23·5 per cent. on dry basis, according to temperature of extraction) is compared with that for other seaweeds. C—**9.**

Proteins: Action of Formaldehyde. R. D. Haworth, R. MacGillivray, and D. H. Peacock. *J. Chem. Soc.*, 1950, 1493-1498. It has been shown that amides such as benzamide and phenylacetamide react with formaldehyde at *pH* 10 to give *N*-hydroxymethyl derivatives which condense with β-naphthol or its 6-bromo- or 3:6-dibromo-derivative. The compounds so produced are hydrolysed by acids. Many proteins behave similarly with formaldehyde and the *N*-hydroxymethyl derivatives react in the presence of alcoholic hydrochloric acid with β-naphthol and its 6-bromo- or 3:6-dibromo-derivative to give condensation products. Analysis of the condensation products for bromine provides a measure of the number of *N*-hydroxymethylamide groups and the results are roughly proportional to the number of amide groups in the protein molecule. It is concluded that, under the alkaline conditions employed, formaldehyde converts some of the amide groups of the protein molecule into *N*-hydroxymethyl derivatives, but that under acidic conditions the formation of *N*-hydroxymethyl derivatives is reduced. The method indicates that silk fibroin contains no amide groups. C—**9.**

Alkaloids: Detection of Indole Nucleus. ("Sur la réaction d'Adamkiewicz, Hopkins et Cole.") V. Brustier, P. Bourbon, and R. Vignes. *Bull. Soc. chim. Fr.*, 1950, 113-114. The reaction of Adamkiewicz, Hopkins and Cole (used for the detection of tryptophan in proteins) has been applied to the detection of the indole nucleus in certain alkaloids. The reaction gives positive results only for molecules containing a true indole nucleus (*i.e.* having four double bonds) and having either straight-chain alcoholic radicals attached to the α- and β-carbon atoms or being an integral part of a cyclic nucleus (except the benzene nucleus). C—**9.**

Aldehydes: Determination in Presence of Ketones. J. Mitchell, jun., and D. M. Smith. *Anal. Chem.*, 1950, **22**, 746-750. The oxidation of aldehydes by silver oxide is used in a quantitative method for their determination. The resulting acid is titrated with standard sodium hydroxide. With the exception of *cyclo*hexanone, no interference from ketones is observed. Experimental data are given. Methods are also presented for the determination of other compounds in presence of aldehydes. Acids are titrated with standard sodium methylate solution. Esters are saponified after active carbonyl compounds have been converted into the oximes. Alcohols are determined after the aldehydes have been separated by treatment with silver oxide or with sodium bisulphate. [23 references.] C—**9.**

Carbonyl Compounds: Determination in Presence of Organic Acids. D. M. Smith and J. Mitchell, jun. *Anal. Chem.*, 1950, **22**, 750-755. A modified acidimetric oxidation procedure (use of hydroxylamine hydrochloride in 80 per cent. ethanol solution) for the determination of carbonyl compounds is presented, in which the *pH* of the reagent is reduced to a point where carboxylic acids barely interfere. Analytical data are given for aldehydes and ketones. C—**9.**

Compositions Prepared from Polyvinyl Chloride and Related Polymers: Examination. J. Haslam and G. Newlands. *J. Soc. Chem. Ind.*, 1950, **69**, 103-106. A method has been developed for the examination of compositions prepared from polyvinyl chloride and related polymers. The polymer is recovered from the composition by solution in tetrahydrofuran or morpholine, followed by precipitation of the polymer with alcohol. Figures are given for the chlorine contents of polymers used in the preparation of compositions and of the corresponding polymers recovered from tetrahydrofuran solution. The analytical data thus obtained are compared with the results of examination of the infra-red spectra of the compositions. C—**9.**

Partly Polymerised Acrylic and Allyl Esters: Determination of Monomer. C. E. Albertson and I. R. MacGregor. *Anal. Chem.*, 1950, **22**, 806-809. The partly polymerised preparation is precipitated in a very finely divided state from a 0·16-0·20 per cent. solution in pyridine by drop-wise addition of bromide-

bromate reagent. Bromine is then released by acidification; this bromine reacts quantitatively with the finely dispersed sample and excess of bromine is determined by normal procedures. C—**9.**

α-Amino Acids: Micro-estimation by a Radioactive Technique. S. Blackburn and A. Robson. *Chem. & Ind.*, 1950, 614-615. A method is described for the micro-estimation of α-amino acids, involving their reaction with a copper phosphate suspension containing ^{64}Cu. The counts (counted by means of a Geiger-Müller apparatus) given by the amino-acid complexes which are formed are determined and can be expressed as μg. of copper. Then the amino-nitrogen can be determined since the relation between μg. of N and of Cu has been found to be linear over the concentration range studied. The method has been applied to the determination of micro-quantities of amino-acids after separation on paper chromatograms. C—**9.**

Amino-acids: Quantitative Determination by Iodometric Titration of their Copper Salts. W. A. Schroeder, L. M. Kay and R. S. Mills. *Anal. Chem.*, 1950, **22**, 760-763. A re-investigation has been made of the method of Pope and Stevens[1] for the determination of amino-nitrogen in protein hydrolysates by iodometric titration of the soluble copper salts of the amino-acids. The precision of the method has been improved by the use of washed copper phosphate, and by the use of the dead-stop end-point method in the iodometric determination of copper. ([1] *J. Textile Institute*, 1930, **30**, A730.) C—**9.**

Sulphur: Micro-determination in Organic Compounds. R. E. Holeton and A. L. Linch. *Anal. Chem.*, 1950, **22**, 819-822. An improved combustion method is described for the determination of traces of sulphur in organic compounds. The sample, either a liquid or a solution of a solid in an appropriate solvent, is introduced into a combustion tube as a fine spray in a stream of air. The atomiser permits precise control of the feed and air delivery rates to the combustion zone. Improvements have been made in the absorption of sulphur dioxide; sulphur is determined nephelometrically as barium sulphate. Experimental data are given. [22 references.] C—**9.**

Fluoride Ion: Determination with Ferric Thiocyanate. R. S. Ingols, E. H. Shaw, W. H. Eberhardt, and J. C. Hildebrand. *Anal. Chem.*, 1950, **22**, 799-803. A study of the ferric thiocyanate complex indicates that the sensitivity of the complex towards the fluoride ion is dependent on both total ion concentration and concentration of the ferric, thiocyanate, hydrogen, and sulphate ions. The concentrations of the first three of these ions can be controlled by the amounts of chemicals added in the test, while the concentration of sulphate ion can be determined by using a second colour tube containing the sample and same reagents plus zirconium oxychloride. The increase in the colour of the ferric thiocyanate complex brought about by the zirconyl ion is a measure of the fluoride ion concentration. The sensitivity of the complex toward a given amount of fluoride is indicated by the difference between the colour intensities of the sample plus zirconyl ions and the colour of a tube of distilled water with ferric thiocyanate reagents. C—**9.**

Zinc and Indium: Amperometric Titrations with Potassium Ferrocyanide. E. L. Nimer, R. E. Hamm, and G. L. Lee. *Anal. Chem.*, 1950, **22**, 790-793. Conditions for the amperometric titration of zinc and indium with potassium ferrocyanide are described. Zinc is titrated in a supporting electrolyte of ammonium acetate and indium in a supporting electrolyte of potassium chloride. Formation of complexes rather than double salts is suggested as the reason for precipitation of normal ferrocyanides. Experimental data are presented. C—**9.**

Water: Determination of Total Hardness. C. A. Goetz, T. C. Loomis, and H. Diehl. *Anal. Chem.*, 1950, **22**, 798-799. A study has been made of the stability of standard disodium dihydrogen ethylenediamine tetra-acetate solutions, which are used for determinations of total hardness in water (the tetra-acetate forms soluble complex ions with calcium and magnesium). The stability of the solutions is shown to be satisfactory at *pH* 5 in 1-gallon soft-glass bottles. Calcium chloride solutions are shown to be stable also. C—**9.**

Chromatography: Streak Reagents. A. L. LeRosen, P. H. Monaghan, C. A. Rivet, E. D. Smith, and H. A. Suter. *Anal. Chem.*, 1950, **22**, 809-811. A number of streak reagents (sensitive at concentrations of 0·01M.), used in detecting zones of colourless substances on the chromatographic column, have been studied in

regard to their usefulness for detecting specific compounds on seven different adsorbents. Some of the reagents used were new. Directions are given for the preparation of the reagents. C—**9.**

Chromatographic Absorbents: Characterisation. P. H. Monaghan, H. A. Suter, and A. L. LeRosen. *Anal. Chem.*, 1950, **22**, 811-813. Data are presented for the characterisation of a number of chromatographic adsorbents. A relation between the rate of flow of the developing solvent through the chromatographic column and the time required for the solvent to penetrate a given distance, is derived and confirmed by experimental data. C—**9.**

Filter Papers: Use in Chromatography. ("Investigation of Paper-Strip Chromatography.") G. N. Kowkabany and H. G. Cassidy. *Anal. Chem.*, 1950, **22**, 817-819. Twenty-two filter papers were examined for use in paper-strip chromatography using mixtures of amino-acids and five different mixed-solvent developers. 53 other papers were examined with two mixed-solvent developers. A brief report is made of the results. C—**9.**

Turbidity: Measurement. I. Gullander. *Acta chem. scand.*, 1949, **3**, 1309-1317. A simple method for turbidity measurements by means of a commercially available photoelectric colorimeter is described. The change in apparent transmission with increasing distance between photocell and suspension is measured. The influence of colour is eliminated and it is not necessary to utilise a standard sample at each measurement. A theory has been worked out and tested by experiments with rubber latex and silica suspensions. The method has been found to be reliable and rapid for routine turbidimetric measurements on viscose. C—**9.**

High-frequency Titrations: Instruments. W. J. Blaedel and H. V. Malmstadt. *Anal. Chem.*, 1950, **22**, 734-742. Illustrated descriptions are given of high-frequency titrimeters that measure frequency changes during the course of a titration. These instruments are stable, sensitive, easy and convenient to use, and suitable for differential titrations. Titration curves are given for acid-base, precipitation, soluble complex, and oxidation-reduction reactions. A mechanism to explain observed frequency changes is discussed. C—**9.**

Stable High-frequency Oscillator-type Titrimeter. K. Anderson, E. S. Bettis, and D. Revinson. *Anal. Chem.*, 1950, **22**, 743-746. An account is given of the design and use of a high-frequency titrimeter using a grid-dip oscillator. Titration curves are given for acid-base and precipitation reactions. Satisfactory results were obtained over a wide frequency range. C—**9.**

Kjeldahl Nitrogen Determinations: Direct Titration of Ammonia with Nickel Ammonium Sulphate Solutions as Absorbent. J. Blom and B. Schwarz. *Acta chem. scand.*, 1949, **3**, 1439-1440. Solutions of salts whose cations form metal ammine complexes have been used as absorbents for ammonia so as to obtain direct titration of ammonia in Kjeldahl nitrogen determinations. Nickel ammonium sulphate solution was found to be suitable for this purpose. C—**9.**

Photoelectric Titrimeter. M. L. Nichols and B. H. Kindt. *Anal. Chem.*, 1950, **22**, 781-784. An illustrated description is given of a new photoelectric titration apparatus, employing two barrier-layer cells and narrow-band glass filters in a current bridge circuit. The theory of the measuring circuit is derived and several methods are suggested for operating the apparatus. C—**9.**

Metals: Corrosion in Acid Solutions Containing Depolarisers. M. Hochberg and C. V. King. *J. electrochem. Soc.*, 1950, **97**, 191-197. Some results are presented of a survey of the action of various quinones and dyes of the phenazine, azo, triphenylmethyl, indigoid, and thiazine types, as corroding agents in acid solution on metallic cadmium, tin, lead, and copper. Reactions are described whose rates are (1) diffusion controlled, (2) chemically controlled, (3) partly diffusion, partly chemically controlled, and (4) subject to inhibition by reduction products or intermediate compounds. C—**9.**

Iodine-azide Reaction: Carbon Disulphide as Catalyst. N. Hofman-Bang and W. Szybalski. *Acta chem. scand.*, 1949, **3**, 1418-1429. A study has been made of the kinetics of the iodine-azide reaction using carbon disulphide as catalyst. The reaction is a second order reaction as to azide ions and carbon disulphide molecules. The rate of reaction is independent of the concentration of iodine. The mechanism of the reaction is discussed. Data for energy of activation of the reaction are tabulated. C—**9.**

Iodine-azide Reaction: Tetrathionate Ion as Catalyst. N. Hofman-Bang. *Acta chem. scand.*, 1950, **3**, 872-885. The kinetics of the iodine-azide reaction using potassium tetrathionate as catalyst were studied. The reaction is a second order reaction as to azide ions and tetrathionate ions. The rate of reaction is independent of the concentration of iodine. The rate-determining reaction step was a reaction between azide ions and tetrathionate ions. A reaction mechanism is proposed and data for the energy of activation of the reaction are tabulated. C—**9.**

Polythene: Photocatalysed Oxidation. A. W. Pross and R. M. Black. *J. Soc. Chem. Ind.*, **69**, 113-116. The deterioration of polythene by artificial ageing has been studied. Curves relating power factor to oxygen absorption are shown. The ultra-violet absorption spectrum shows that the attack is probably due to the presence of carbonyl groups as an impurity in the polythene. The effect of antioxidant addition was followed by folding endurance tests. Infra-red absorption spectra between 2·5 μ. and 15 μ. have been mapped before and after irradiation and the presence of hydroxyl, carbonyl, and carboxyl groups has been established. The photochemical mechanism is discussed. C—**9.**

Membranes: Electrochemical Behaviour. ("Recent Advances in the Electrochemistry of Membranes of High Ionic Selectivity.") K. Sollner. *J. electrochem. Soc.*, 1950, **97**, 139C-151C. Some aspects of the electrochemistry of membranes are dealt with as follows: (*a*) Membranes of porous character for electrochemical studies; (*b*) Fundamental electrochemistry of porous-character membranes; (*c*) Preparation and properties of membranes of high ionic selectivity—"permselective" membranes; (*d*) Electrochemistry of permselective membranes; (*e*) Permselective membranes in physiochemical studies and as physiochemical tools. [59 references.] C—**9.**

Electrophoresis: Boundary Anomalies and Artifacts. K. G. Stern and M. Reiner. *J. electrochem. Soc.*, 1950, **97**, 213-218. The paper deals with the anomalies inherent in the dissymmetry of the ascending and descending boundaries, with stationary boundary anomalies and interaction phenomena as well as electrophoretic boundary spreading. Artifacts due to convective and electrical disturbances are analysed and the behaviour and detection of false or spurious boundaries are discussed. C—**9.**

Colour Matching. ("Practical Art of Colour Matching on Paper.") F. O. Sundstrom and E. I. Stearns. *Paper Trade J.*, 1950, **131**, No. 2, 24-26, 28-30. A practical description is given of some aspects of the art of colour matching on paper. The two main concepts of colour, shade and strength, are introduced and explained. The principles underlying the production of colours from the six basic ones are described with the aid of colour maps. Several formulæ are given for the mixing of dyes to match various given shades. C—**9.**

Spectra-structure Correlations in the Infra-red Region. N. B. Colthup. *J. opt. Soc. Amer.*, 1950, **40**, 397-400. A chart is presented giving probable positions of characteristic infra-red absorption bands (from 4,000 to 400 wave numbers) for certain molecular groupings (*e.g.*, aliphatic and aromatic carbon chains, acid, ester, and amide groups, inorganic salts and derived compounds). The reliability of the various correlations is discussed. C—**9.**

Colour Perception: Effects of Daylight and Tungsten Light-adaption. R. W. G. Hunt. *J. opt. Soc. Amer.*, 1950, **40**, 362-371. A description is given of an apparatus which has been used to investigate how the colour sensation corresponding to a given stimulus changes as the state of adaption of the eye is altered. A limited series of results obtained with the apparatus reveals some very striking changes in colour sensation as the adaption is varied. A few adaption and recovery curves plotted against time are given; these indicate that photochemical rather than electrical processes control the adaption effects. The saturation effect is used to deduce a picture of retinal processes in the light- and dark-adapted states. C—**9.**

Symmetrical Cyanine Dyes: Electronic Theory of Colour. ("Excited Electronic Levels in Conjugated Molecules.") W. E. Moffitt. *Proc. Phys. Soc.*, 1950, A, **63**, 700-707. Some topics in the electronic theory of the colour of symmetrical cyanine dyes are discussed by means of resonance formalism. Conclusions for the formamidinium ion are confirmed by use of the molecular orbital method. As a result of the analysis, certain modifications in the qualitative symbolism of

colour theory have been put forward in the hope that the factors governing absorption may be more clearly understood. C—**9.**

Rotating Specimen Mount for Use with X-Ray Spectrometer in Measuring Crystallite Orientation in Cellulosic and other Textile Fibres. L. Segal, J. J. Creely, and C. M. Conrad. *Rev. Sci. Instrum.*, 1950, **21**, 431-435. The quantitative evaluation of crystallite orientation in textile fibres by X-ray methods is discussed. Results can be automatically recorded on a strip chart using an X-ray spectrometer with Geiger-Müller counter. An illustrated account is given of a specimen holder for rotating the fibre bundle in the X-ray beam. A tentative procedure is outlined for using this apparatus to determine the crystallite orientation of a bundle of cellulose fibres. Some typical recordings of the intensity curves of the 002 arcs from ramie, cotton, and high-tenacity rayon are presented. C—**9.**

X-Ray Tube producing a Beam of X-Rays Convergent to a Point. C. H. Bachman and S. J. Silverman. *J. appl. Phys.*, 1950, **21**, 615. An X-ray tube is described that produces a convergent beam in the form of a hollow cone, the apex of which forms a cross-over point in space for the radiation; the radiation density at this cross-over space is much greater than at any region in space before or after it. With this design, no electric focusing problem occurs. Preliminary results with the tube are briefly described. C—**9.**

Electron Microscopy: Vibration Studies. F. A. Hamm and F. C. Snowden. *Rev. Sci. Instrum.*, 1950, **21**, 426-431. A scheme is described for detecting and measuring vibration as related to the performance of an RCA electron microscope (Type EMU). The procedure involves the use of a phonograph pick-up arm in conjunction with a cathode-ray oscillograph. Electron micrographs show the image displacements due to several different amplitudes of vibration. The scheme may be used as a guide in high-resolution electron microscopy. C—**9.**

Photographic Engineering in Textile Research. H. M. Lester. *Papers Amer. Ass. Text. Technol.*, 1949, **5**, 28-33. An account is given of various aspects of the applications of photography to textile research problems. Principles and difficulties of the technique are discussed and some specific examples of its use are mentioned. C—**9.**

Direct Current Operated Accelerometer. R. C. Lewis. *J. acoust. Soc. Amer.*, 1950, **22**, 357-361. The chief mechanical details of a newly developed accelerometer are described. The relationship of acceleration range, sensitivity, and natural frequency for the design is defined, and its properties of selectivity and stability are discussed. Various types of coupling circuits in present use with high and low impedance loads are shown diagrammatically, and the possibility of greater zero stability by the use of a low-level carried is noted. C—**9.**

Vibrating Beam with Shear Motions: Electrical Analogy. ("An Equivalent Circuit for a Vibrating Beam Which Includes Shear Motions.") H. M. Trent. *J. acoust. Soc. Amer.*, 1950, **22**, 355-357. Lengthy computations of the lower normal modes of slim but complicated structures (represented by a tapered continuous beam) can be avoided if substituted by model experiments on equivalent electric circuits. It is shown that such an equivalent circuit can be constructed which is made up of lumped passive components. Given such a circuit, it is then possible to determine experimentally the gross responses of the structure to an arbitrary excitation. C—**9.**

Textile Materials: Dynamic-property Data: Theoretical Considerations. W. J. Lyons. *J. appl. Phys.*, 1950, **21**, 520-522. Previous work by Tobolsky and Eyring[1] on the application of a relaxation mechanism to dynamic experiments indicated that the modulus (E) of polymeric materials should be independent of frequency. This theoretical conclusion has been previously confirmed on the textile stretch-vibrometer for samples of nine different textile materials up to frequencies between 300 and 400 c.p.s. The validity of a previously derived[1] internal-friction relation has been investigated by use of data obtained on a high-tenacity nylon monofil. ([1]*J. Textile Institute*, 1943, **34**, A375.) C—**9.**

Polyethylene Terephthalate (Terylene): Dielectric Properties. W. Reddish. *Trans. Faraday Soc.*, 1950, **46**, 459-475. The permittivity and loss tangent of the polyester Terylene (values for density, volume-expansion coefficients, and refractive index are given) have been determined as functions of frequency

(10^6-10^7 cycles per second) and of temperature (−80° to +180° C.), and the volume resistivity in the high temperature region has been studied. Three a.c. dielectric processes have been distinguished. Effects associated with variations in the degree of crystallinity and in the water content of the material have been investigated. Tentative interpretations of the data are proposed. C—9

High Polymers: Equation of State. R. S. Spencer and G. D. Gilmore. *J. appl. Phys.*, 1950, **21**, 523-526. The paper reports isothermal compression measurements on polymethyl methacrylate, polyethylene, cellulose acetate butyrate, and ethyl cellulose at temperatures within the fabrication range. A modified Van der Waals' equation of state, previously obtained, has been found to apply to these thermoplastics, and values are given for the constants. The usefulness of the relationship is illustrated in a brief discussion of some phases of the injection moulding process. C—9.

Plasticized Vinyl Chloride Compositions: Mechanical and Electrical Properties. L. E. Nielsen, R. Buchdahl, and R. Levreault. *J. appl. Phys.*, 1950, **21**, 607-614. A systematic study has been made of various mechanical properties, *e.g.*, the dynamic modulus and dissipation factor, stress-strain relationships, and creep of plasticized vinyl chloride compositions, over a wide range of temperature. Instruments and testing procedures used are briefly described. The temperature dependence of the dynamic mechanical and a.c. electrical properties of a given polyvinyl chloride-plasticizer composition can be characterised by two quantities: (*a*) the transition temperature which is defined as the temperature of maximum dissipation factor, and (*b*) the half-widths of the loss factor-temperature curves. The half-width is defined as the temperature difference in °C. where the dissipation factor has reached half its maximum value. C—9.

Plasticization of Polyvinyl Chloride. I. Physical Changes and their Measurement. M. L. Dannis. *J. appl. Phys.*, 1950, **21**, 505-509. The processes involved in the plasticization (softening) of polyvinyl chloride by dioctyl phthalate have been investigated. Imbibition of the liquid is accompanied by volume reduction of the system, and dilatometric methods have been used to evaluate the amount and rate of volume decrease. The rate is dependent on temperature. This is followed by solution of the liquid into the resin with no further volume change, but with large dielectric change. Dielectric changes have been measured on material in a cylindrical condenser, using a Schering bridge; these changes are dependent on rate and have an activation energy of about 110 kg.-cal. C—9.

Plasticization of Polyvinyl Chloride. II. Plasticizer Variations in PVC-Plasticizer Systems. M. L. Dannis. *J. appl. Phys.*, 1950, **21**, 510-513. The plasticization of polyvinyl chloride by dioctyl phthalate (*cf.* previous abstract) occurs through a set of processes of high activation energies (50-100 kg.-cal.). At fixed temperature, "reaction" rates are directly proportional to the vapour pressure of the liquid. The dielectric change may be treated similarly to a chemical reaction between a solid and a vapour, and the free energy of activation evaluated. A theoretical interpretation of experimental facts is made and an expression for the free energy of activation is obtained. C—9.

Polyvinyl Acetate Solutions: Dynamic Rigidity and Viscosity. ("Mechanical Properties of Substances of High Molecular Weight. VIII.") J. D. Ferry, W. M. Sawyer, G. V. Browning, and A. H. Groth, jun. *J. appl. Phys.*, 1950, **21**, 513-517. The dynamic rigidities and viscosities of concentrated solutions of polyvinyl acetate in 1 : 2 : 3-trichloropropane have been obtained from transducer and wave propagation measurements. Two polymer samples with number-average molecular weights of 140,000 and 840,000 were studied in the lower audiofrequency range at concentrations from 3 to 40 per cent. and temperatures from −3° to 41° C. For each sample, when the reduced dynamic rigidity and the reduced dynamic viscosity were plotted against the reduced frequency, all the data superposed to give two composite dispersion functions. C—9.

Polystyrene: Mechanical Properties of Oriental Films. L. E. Nielsen and R. Buchdahl. *J. appl. Phys.*, 1950, **21**, 488-493. Cast films of polystyrene were oriented by stretching at temperatures above the softening temperature of the material and then cooled. An experiment was carried out in which the amount of stretching, temperature of stretching, time held in the stretched state before

cooling, and effect of several cycles of stretching before cooling were investigated as they affect the birefringence, the stress-strain properties, dynamic modulus and damping, and the softening temperature of polystyrene. C—**9.**

Polystyrene: Second-Order Transition Temperatures and Related Properties. T. G. Fox, jun., and P. J. Flory. *J. appl. Phys.*, 1950, **21**, 581-591. Dilatometric and viscometric data on fractionated polystyrenes containing diethylbenzene end groups are presented over wide temperature ranges. The second-order transition temperature, viscosity-temperature coefficient, and specific volume all change rapidly with increasing molecular weight toward asymptotic limits which are practically reached at a molecular weight (M) of about 30,000. Empirical expressions are given relating these properties to molecular weight and temperature. In each case the dependence on molecular weight is expressed as a simple function of $\overline{M}_n^{-1}$ (number-average molecular weight). These observations are interpreted and correlated on the basis of the hypothesis that the local configurational order in a liquid polymer is disturbed by the introduction of end groups to a degree that is proportional to their number. C—**9.**

Superelastic Polymers: Time-Temperature Dependence of Viscoelastic Phenomena. F. S. Conant, G. L. Hall, and W. J. Lyons. *J. appl. Phys.*, 1950, **21**, 499-504. Experiments have been carried out to determine the influence of time and temperature on the shear creep and recovery of compounds based on Hevea, GR-S, Neoprene GN, Butaprene, and butyl rubber. An empirical equation has been found which represents adequately the time-temperature dependence of the viscoelastic phenomena in the superelastic polymers. Experimental results verify this relation. A comparison of the empirical equation $(\log t_c = [C_A/(T-b)] + C_B)$ with that of a theoretical reaction-rate equation of Tobolsky and Eyring indicates a temperature dependence of the energy of activation. C—**9.**

High Polymers: Transitions in High Polymeric Materials. R. Buchdahl and L. E. Nielsen. *J. appl. Phys.*, 1950, **21**, 482-487. The evidence for and against the interpretation of the "second-order" transition in polymers in terms of a thermodynamic transition of the second order is reviewed and some new experimental data concerning transition in mixtures of polymers are presented. It is shown that the relaxation theory is insufficient to explain the transition, as observed by mechanical, electrical, and thermal measurements. Various molecular processes responsible for a thermodynamic transition are discussed and it is shown that the general mechanism of "hindered" rotation (changes in rotational confirmation) is the most likely. C—**9.**

High Polymers: Random Noise in Dielectric Materials. R. F. Boyer. *J. appl. Phys.*, 1950, **21**, 469-477. When thin films of polar plastic materials are subjected to d.c. potentials of 10 to 300 volts per mil, they exhibit current fluctuations (frequencies in range of 60 to 1,000 c.p.s.) which last for minutes and even persist for a few seconds on removing the voltage. These fluctuations are about 1,000-fold above the noise level of the circuit and are about 1 per cent. of the steady d.c. current. The noise is greater the more polar the nature of the polymer and the higher its moisture content. The effect seems to arise from water or impurity ions which can jump wherever a hole opens between polymer chains and is thus an activated rate process sufficiently slowed down by the highly viscous nature of the polymeric medium to be readily observable. The noise is most pronounced in Cellophane, nylon, and copolymers of vinylidene chloride with acrylonitrile. A theoretical discussion of the phenomenon is presented. C—**9.**

Emulsion Polymerisation with Ultrasonic Vibration. A. S. Ostroski and R. B. Stambaugh. *J. appl. Phys.*, 1950, **21**, 478-482. Emulsion-type polymerisation reactions have been accelerated by irradiation with ultrasonic energy. A magnetostriction oscillator and a piezo-electric oscillator which have been used as sources of vibrational energy are briefly described. Experiments were made to separate local heating effects from those due to vibrational energy. Results are shown graphically for the polymerisation of styrene and several synthetic rubber mixtures. C—**9.**

High Polymers: Comparative Stress Phenomena. M. L. Huggins. *J. appl. Phys.*, 1950, **21**, 518-519. Flow and elastic properties are considered in a comparative and qualitative manner, for crystalline solids, simple liquids, glasses, and high polymers. C—**9.**

Adsorption: Thermodynamics. I. D. H. Everett. *Trans. Faraday Soc.*, 1950, **46**, 453-459. As a preliminary to a more detailed study of the thermodynamics of adsorption, the general methods of approach are discussed and it is concluded that a procedure closely akin to that employed in studying solutions is the most convenient. Mathematical treatments are used. C—**9.**

Cellulose: Crystallinity and Fibre Properties. K. Ward, jun. *Text. Res. J.* 1950, **20**, 363-372. The concept of the crystallinity of cellulose (mainly cotton cellulose) is discussed in the broad sense which involves the whole fine structure and not merely the degree of crystallinity. There are four main parameters of the fine structure of cellulose, *viz.*, (*a*) the nature of the crystal lattice, (*b*) the percentage of crystalline material, (*c*) the size of the crystallites, and (*d*) the orientation of the crystallites. The influence of these parameters on certain of the important physical properties of cotton is discussed. High strength and low extensibility are associated with a high percentage of crystallinity and also with a high crystallite orientation parallel to the fibre axis. High birefringence is also associated with high orientation. Moisture regain and heat of wetting decrease as the degree of crystallinity increases, whilst density increases. High chemical reactivity is definitely associated with the amorphous regions, and therefore high reactivity corresponds to a low degree of crystallinity. [53 references.] C—**9.**

Random Distribution of Particles. ("The Expected Number of Aggregates in a Random Distribution of n Points.") C. Mack. *Proc. Camb. phil. Soc.*, 1950, **46**, 285-292. When n points are distributed at random (equally likely anywhere) over a large area or volume, they may form small clusters or aggregates. In this paper a k-aggregate is defined more precisely as k points which can be covered by a small figure of given size, shape, and orientation, but whose position is not otherwise specified. Exact formulæ for the expected number of such k-aggregates are given in some cases, while a good approximate formula (accurate in most practical cases) and limits are stated, covering all cases. C—**9.**

Sequential Analysis: Use of Range. D. R. Cox. *J. Roy. Stat. Soc.*, 1949, **B, 11**, 101-114. Previous authors have given sequential tests for hypotheses about the variances of normal populations. The present paper gives arithmetically more convenient tests involving the range. The sampling distribution of range is approximated by a Γ distribution. This leads to convenient sequential and fixed sample size tests whose properties are discussed. The adequacy of the Γ approximation in sequential analysis is considered. C—**9.**

Mean and Standard Deviation: Estimation from Quantiles. F. Benson. *J. Roy. Stat. Soc.*, 1949, **B, 11**, 91-100. It is sometimes convenient to use quantiles for estimating the mean and standard deviation of a distribution which may not be normal. It is shown how the bias in the estimates can be minimised if the distribution is not markedly non-normal. A particular example of the application of the use of quantiles is given for the case of a Moscrop single-thread strength chart. C—**9.**

Standard Deviation and Distribution of Range in Non-Normal Populations. K. J. Shone. *J. Roy. Stat. Soc.*, 1949, **B, 11**, 85-88. An estimate is made of the non-normality of the parent population by considering the range of small samples taken from that larger parent population. Formulæ are deduced for non-normal populations with a single mode. It is indicated that the effect of non-normality is unknown. C—**9.**

Frictional Electrification and Gaseous Discharge. J. A. Medley. *Nature*, 1950, **166**, 524-525. The electrification by a metal cylinder of wool fibres and of nylon and polythene fibres was investigated. Relative humidity was varied, and carbon tetrachloride was introduced into the atmosphere. The results suggest that the charge density is limited by conduction if the specific conductivity is in excess of 10^{-18} ohm^{-1} cm.$^{-1}$, and in other cases by the dielectric strength of the atmosphere, and that a single rub suffices to produce electric saturation. Thus, in a study of frictional electrification, quantitative measurements may be of doubtful value. W—**9.**

Fibres: Influence of Molecular Configuration on Frictional Properties. J. Lindberg and N. Gralén. *J. Textile Institute*, 1950, **41**, T331. The suggestion that low chemical reactivity is responsible for the low coefficient of friction of wool (E. H. Mercer, private communication) seems to be confirmed by the investi-

gation of Shooter and Thomas (*Research*, 1949, **2**, 533; *J. Textile Institute*, 1950, **41**, A137) on the frictional properties of plastics. Many specific textile properties of wool fibres depend more or less on the low coefficient of friction. By independently changing the surface and the bulk properties of a fibre it is theoretically possible to produce textile materials with a wide range of different properties. W—**9**.

Wool: Microbiological Degradation; Digestion of Normal and Modified Fibrillar Proteins. W. H. Stahl, B. McQue, G. R. Mandels, and R. G. H. Siu. *Text. Res. J.*, 1950, **20**, 570-579. The extent of digestion of a number of fibrillar proteins by *Microsporum gypseum* over a 21-day period was measured. The percentage digestion decreased in the order collagen, feather, hoof, wool, horn, horsehair, mohair, and silk. Factors influencing the rate of digestion, including the amino acid composition, histological complexity, geometrical structure, and chemical modification of the proteins are discussed. W—**9**.

Flax Straw and other Cellulosic Materials: Delignification. E. Besser, R. E. Montonna, and F. Smith. *Nature*, 1950, **166**, 195-196. The writers state that one treatment of seed-flax straw with an aqueous solution containing 2 per cent. sodium hydrosulphite and 2 per cent. caustic soda for 2 hours under pressure at 155° C. has been found to give complete extraction of the lignin, and that the resulting fibre can be readily spun into yarn. Furthermore, this treatment affords a method of separating the constituents of cellulosic materials for investigation. The cellulose is unaffected. The method can also be used for delignification of grains, leaves, and straws. L—**9**.

Flax Seed: Diffusion of Moisture. H. L. Penman. *Brit. J. Appl. Physics*, 1950, **1**, No. 8, 213. The diffusion coefficient, D, in general is inversely proportional to the slope of the moisture content/humidity curve. Equations are derived relating D, adsorption and desorption. For desorpton D_d decreases with increase of per cent. R.H. and therefore the data of Samuels and Tait (*Brit. J. Appl. Physics*, 1950, **1**, No. 5, 125, Fig. 5), should lie between two lines of different slopes passing through the origin and not about the mean line as shown. L—**9**.

10—ECONOMICS

Cotton: Primary Marketing; Practices and Costs. A. J. Fortenberry. *U.S. Dept. Agric. Prodtn. Marking Admin. Cotton Branch, Pamph.*, 1950, May, 4 pp. Information is presented with respect to purchases of cotton by ginners and services performed incident to the assembling and merchandising of cotton in the U.S. Relevant data are tabulated by states for various seasons between 1942 and 1949. C—**10**.

Rayon: World Production and Consumption, 1948-50. J. G. Oliver. *Silk & Rayon Rec.*, 1950, **24**, 862, 864, 866, 960. Facts and figures are given concerning the world production and consumption of rayon during 1948, 1949, and the first quarter of 1950. Tables of data are given classified according to countries. A statistical survey is made in which British exports of yarns and materials are analysed. C—**10**.

Rayon: World Production, 1949. Anon. *Rayon Organon*, 1950, **21**, 81-90. Facts and figures are presented for the 1949 world production of rayon. Production statistics by countries are given from 1935 to 1949 for rayon filament and staple yarn. Figures for current plant capacity are also given for each country. Supplementary data are given on rayon production and plant capacity by process of manufacture and also on world production of cotton, wool, and silk. C. C—**10**.

Synthetic Organic Chemicals: United States Production and Sales for 1947, 1948, and 1949. J. H. Hibben. *Ind. Engng Chem.*, 1950, **42**, 990-997. The production and sales of synthetic organic chemicals in the United States for 1947-49 are reported and compared with those obtained in previous years. C. C—**10**.

Soviet Flax Area. *Linen Trade Circ.*, 1950, **36**, August 5, 17. The area under fibre flax is stated in a report of the U.S.S.R. Central Statistical Administration to have been increased by 270,000 hectares. L—**10**.

Northern Ireland Bonus. *Linen Trade Circ.*, 1950, **36**, July 29, 18. A bonus of 2/- per stone will be paid to growers by the Flax Development Committee for dam-retted flax, grades 1 to 5, which is up to the approved standard. L—**10**.

Perlon Hosiery: Production in Germany. *Hosiery Times*, 1950, **23**, (251), 16. Note on production of Perlon hose by German firms. Companies are operating with machinery imported from the U.S., as the West German production of such equipment is very limited. H—**10**.

Spanish Hosiery Industry. *Hosiery Ind. Whly.*, 1949, **56**, (10), 16-18. Brief review of Spanish hosiery industry: fully-fashioned machines are all of pre-1936 German make; American, English and German circular machines are in use. Spain has 871 knitting mills of all types, using 19,993 machines. H—**10**.

U.S. Hosiery Production. *Hosiery Times*, 1950, **23**, (255), 63-7. Review of American hosiery production and consumption, with classified production figures for 1939-49. (Reproduced from *Rayon Organon*, New York.) H—**10**.

U.S. Hosiery Production. *Hosiery Times*, 1950, **23**, (257), 47-9. Review of American fully-fashioned hosiery production, with notes on increase in number of mills, the scrapping of obsolete machines, export demands, percentage of small units, *etc.* H—**10**.

World Cotton Supplies: Developments. International Cotton Advisory Committee. *Text. Whly.*, 1950, **46**, 278-284, 342-346, 432-434. The following statistics are tabulated: (1) World supply and distribution of cotton for 1938/39 and 1949/50 and other post-war seasons, and (2) Supply and distribution of cotton in the United States and "elsewhere" for the same seasons. These tables are followed by a review of the raw cotton situation, with statistics, in the Anglo-Egyptian Sudan, Australia, Austria, Brazil, Egypt, France, Greece, India, Japan, Mexico, Pakistan, Paraguay, Peru, Portugal, Salvador, the Soviet Union, Syria, the Union of South Africa, the United Kingdom and the United States. C—**10**.

Argentine Cotton Crop, 1949/50. Anon. *Text. Whly.*, 1950, **46**, 306 (from "*Foreign Crops and Markets*," U.S.A.). Some statistics are given of the record crop of 550,000 to 575,000 bales in the current season, from some 1,235,000 acres. The export surplus is estimated at 160,000 to 185,000 bales, but of the inferior grades since local mills consume the better grades. Current prices are tabulated. C—**10**.

British Rayon Industry: Output and Deliveries, June, 1950. Anon. *Board of Trade J.*, 1950, **159**, 292. Figures are presented for the monthly output and deliveries of rayon yarn for 1950 up to June. Quarterly figures for 1949 are also given. Output in June reached a new record; home consumption dropped slightly. C—**10**.

British Cotton Industry: Output and Employment for May, 1950. Anon. *Board of Trade J.*, 1950, **159**, 80-81. Figures are presented for cotton yarn and cloth production and employment and machinery activity for the years 1945 to 1950 (May). Monthly figures are given for 1949 and 1950 (to May). Weekly production rate during May was at a record level. Employment on May 27th was a post-war record. C—**10**.

Cotton Spinning Costs in the United States and Great Britain. C. H. Heaton. *Text. Whly.*, 1950, **46**, 286-290 (from "*Financial Times*"). The writer analyses the differences between American and British output in cotton spinning as reported by the Anglo-American Cotton Spinning Productivity Team. He concedes that American productivity ranges from 119 to 328 units when British productivity is taken as 100 but argues that on the basis of costs the difference is nothing like so great. Findings of the Team that bear on this aspect of the problem are stressed. For example, high productivity in the United States is associated with the use of the best of the raw cotton supply, at a premium. Further, the relation between labour costs and machinery costs differs in the two industries and therefore the benefit of introducing new machinery is on a different basis. C—**10**.

Handloom Industry of India: Re-organisation. B. C. Bhattacharya. *Indian Text. J.*, 1950, **60**, 644-655, 658. The history and present position of the handloom industry in India is discussed. It is the most important single cottage industry in India and plays a significant part in Indian economy. Many technical improvements are required for its further development. There is a need for expansion of facilities for technical training and research. A marketing organisation is required for the distribution of yarn to the weavers and for the sale of the woven goods. The possibilities of using the co-operative system of organisation are discussed. C—**10**.

11—INDUSTRIAL WELFARE, INDUSTRIAL PSYCHOLOGY AND EDUCATION

Textile Industry: Recruitment of Students. A. Draper. *J. Textile Institute*, 1950, **41**, P233-236. The selection, recruitment, and training of students for the textile industry are discussed. C—**11.**

Activity Vector Analysis in Weaving Shed. W. Eastman. *Text. World*, 1950, **100**, No. 6, 153, 186, 188. A brief report is given of the use of the Activity Vector Analysis test, in an American mill, for the selection and placement of weaving shed personnel. C—**11.**

Work Study: Methods-Time Measurement. ("Predetermined Time Standards in Methods Engineering.") W. Rodgers. *Dept. of Management Studies, Acton Tech. Coll. Pamphlet*, 8 pp. Some aspects of methods-time measurement (M.T.M.) are discussed. These concern the evolution of predetermined time standards, nature of M.T.M., application of M.T.M., comparison of time study and M.T.M. procedures, uses and advantages of M.T.M., and criticisms and limitations. C—**11.**

Executive Council Report. Textile Workers Union of America, CIO. *6th Bienn. Conv. Text. Workers Union Amer.*, 1950, 98 pp. C—**11.**

Trichloroethylene Vapours: Burning of Skin. ("Burns of the Skin Produced by Trichloroethylene Vapours at Room Temperature.") C. C. Maloof. *J. industr. Hyg. Toxicol.*, 1949, **31**, 295-296 (through *Bull. Hyg.*, 1950, **25**, 387). The case history is given of an industrial accident in which an operative received burns from the effects of trichloroethylene vapour (at room temperature) on his skin. C—**11.**

Radiation Work: Health Hazards. M. Ingram. *Science*, 1950, **111**, 103-109. The types of radiations which may be injurious to health are reviewed briefly. The detection of radiation damage, and the determination and maintenance of safe working conditions are discussed. C—**11.**

Hosiery Industry Problems. W. A. Dutton. *Hosiery Times*, 1950, **23**, (251), 62. Report of lecture to Coventry Textile Society on problems in the hosiery trade. H—**11.**

Hosiery: Quality Control. ("Quality Control in a Hosiery Mill.") *Hosiery & Underwear Rev.*, 1950, **31**, (9), 151. Review of work done in Burlington Mills hosiery quality control laboratory, with description of new equipment and increased facilities. Illustrations. H—**11.**

Trade Unions and Productivity. Trades Union Congress. *Text. Wkly*, 1950, **46**, 292-296. Extracts are taken from a report by a team of British Trade Union officials who visited the United States to study the problems of productivity. The recommendations of the team with regard to industrial efficiency, education and training of staff, workshop organisation, participation in technical advances, profits and prices, and the exchange of information between the two countries are reproduced, and also one of a number of appendices, giving American methods for calculating the standard number of spindles per operator. C—**11.**

Industrial Aptitude Tests. J. E. Moore. *Text. Industr.*, 1950, **114**, June, 90-94. The reliability, value, and application of aptitude tests for industrial workers (especially in the textile industry) are discussed. Types of tests, *e.g.*, learning ability, dexterity and speed of manipulation, personality, and visual tests are dealt with individually. A bibliography is given. C—**11.**

Textile Industry: Technical Education. W. E. Morton. *J. Textile Inst.*, 1950, **41**, P299-305. Standards and organisation of technical education for the textile industry in Great Britain and U.S.A. are compared. The British system is discussed with reference to part-time and full-time education. Some observations are made on courses and examinations. C—**11.**

Textile Research: Stamford Research Laboratories; American Cyanamid Company. H. R. Mauersberger. *Rayon synth. Text.*, 1950, **31**, July, 41. Some facts are given about the Stamford (U.S.A.) textile research laboratories of the American Cyanamid Company. C—**11.**

Scientific Research in Industry. Anon. *Nature*, 1950, **166**, 41-44. A brief report is given of a recent debate in the House of Commons (May 5th) on the utilisation of Britain's scientific resources and manpower. The subject is then discussed more fully with reference to the book "Co-operative Industrial Research" by Prof. R. S. Edwards. The emphasis of the discussion is laid on Research Associations. C—**11.**

12—CONFERENCES AND EXHIBITIONS

British Industries Fair, 1950: Textiles at Earl's Court. Anon. *Brit. Rayon & Silk J.*, 1950, **27**, June, 43-44. A brief review is given of the textile exhibits at the Earl's Court section of the 1950 B.I.F. B—**12.**

Swiss Industries Fair, 1950: Textile Machinery. Anon. *Brit. Rayon & Silk J.*, 1950, **27**, May, 74-81; June, 45-48. An illustrated report of the textile machinery section of the 1950 Swiss Industries Fair is presented. C—**12.**

Swiss Textile Accessory Manufacture. Anon. *Brit. Rayon & Silk J.*, 1950, **27**, June, 49, 81. Some impressions of the manufacture of textile accessories in Switzerland are presented with special reference to the production of flat steel healds in the model factory of Grob and Co. Ltd. C—**12.**

American Textile Machinery Exhibition, Atlantic City. Anon. *Brit. Rayon & Silk J.*, 1950, **27**, June, 74-79; July, 78-82; August, 68-69; *Text. Rec.*, 1950, **68**, July, 82-90; August, 81-88. Illustrated descriptions are given of the principal exhibits at the Atlantic City textile machinery exhibition. C—**12.**

Knitting and Allied Crafts Exposition, New York. Anon. *Text. World*, 1950, **100**, No. 6, 120-125; *Text. Industr.*, 1950, **114**, No. 6, 153, 155, 157; *Text. Rec.*, 1950, **68**, July, 92-94; *Brit. Rayon & Silk J.*, 1950, **27**, June, 62-64. Illustrated descriptions are given of some of the knitting matchines, finishing and sewing machines, and testing and measuring instruments exhibited at the Knitting and Allied Crafts Exposition, held in New York on April 24th-29th. C—**12.**

Atlantic City Textile Machinery Exhibition. Anon. *Text. Industr.*, 1950, **114**, July, 110-133. Very brief descriptions are given of the equipment exhibited for the first time at the Atlantic City Textile Machinery Exhibition. C—**12.**